



Fasteners & Metals Interlaboratory Testing Program

Summary Report Cycle 148, 4th Qtr 2024

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ABOUT THE FASTENERS & METALS PROGRAM

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

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

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

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries including rubber, plastics, fasteners and metals, containerboard, paper, color, hemp, and wine as well as proficiency tests for forensic laboratories. All of the tests are designed to assist organizations in achieving and maintaining quality control objectives. Labs from the U.S., as well as more than 100 countries, currently participate in the CTS programs.

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Key for Fasteners & Metals Program Web Summary Report

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

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

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

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

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

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

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

Data Flags

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

Graph - For each laboratory, the Lab Mean for the second sample (y-axis) is plotted against the Lab Mean for the first sample (x-axis) with each point representing a laboratory. The horizontal and vertical cross-hairs are the Grand Means for each sample. When 20 or more laboratories are included in the statistics, an ellipse is also drawn so that 95% of the time a randomly selected laboratory will be included inside the ellipse. Plotted data flags are explained above. Labs not receiving a data flag appear as points on the plot.



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1004

Charpy V-Notch (Room Temperature)
ASTM E23

WebCode	Data Flag	Sample U05			Sample U06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2QFUFR		34.67	-6.03	-1.99	34.67	-6.14	-2.05
7R7WLP		43.56	2.86	0.94	39.99	-0.81	-0.27
7RL32E		39.10	-1.60	-0.53	37.21	-3.60	-1.20
86PTE8		40.22	-0.48	-0.16	44.55	3.74	1.25
93WE43		41.33	0.63	0.21	42.67	1.86	0.62
AMMYMC		39.00	-1.70	-0.56	44.67	3.86	1.29
B6BQYA		45.23	4.53	1.50	40.67	-0.14	-0.05
BG6K3K		43.00	2.30	0.76	38.50	-2.31	-0.77
DUBL4E		40.22	-0.48	-0.16	40.22	-0.58	-0.19
DURRPJ	*	46.13	5.43	1.80	49.13	8.33	2.78
G6AJT4		37.86	-2.84	-0.94	39.41	-1.39	-0.47
GUNDVZ		36.57	-4.13	-1.37	38.93	-1.87	-0.63
H4HCAX		38.86	-1.84	-0.61	39.09	-1.72	-0.57
HJ8HKC		37.17	-3.53	-1.17	39.10	-1.71	-0.57
HXP7UA		39.67	-1.03	-0.34	39.00	-1.81	-0.60
L9384Z		41.83	1.13	0.37	40.17	-0.64	-0.21
LJG9J7		39.17	-1.53	-0.51	37.33	-3.47	-1.16
PEWDBY		39.32	-1.38	-0.46	39.77	-1.04	-0.35
PLMT8B		43.13	2.43	0.80	41.00	0.19	0.06
Q3EDUV		35.33	-5.37	-1.77	39.33	-1.47	-0.49
QXXLCW		38.00	-2.70	-0.89	38.67	-2.14	-0.71
UWGU49		39.67	-1.03	-0.34	42.67	1.86	0.62
VHDT2R		41.77	1.07	0.35	41.45	0.65	0.22
WFM7NV		43.33	2.63	0.87	43.00	2.19	0.73
XKBBWP		42.56	1.86	0.61	42.24	1.43	0.48
YDJ2TY		45.00	4.30	1.42	46.33	5.53	1.84
YY33NY		40.67	-0.03	-0.01	38.33	-2.47	-0.83
ZW3G6D		46.00	5.30	1.75	44.00	3.19	1.07
ZZQW2T		41.90	1.20	0.40	41.30	0.49	0.16

Summary Statistics

	Sample U05		Sample U06	
Grand Means	40.70	Joule	40.81	Joule
Stnd Dev Btwn Labs	3.03	Joule	3.00	Joule

Samples U05, U06 : AISI 4340, AISI 4340

Statistics based on 29 of 29 reporting participants



Analysis 1004

Charpy V-Notch (Room Temperature)

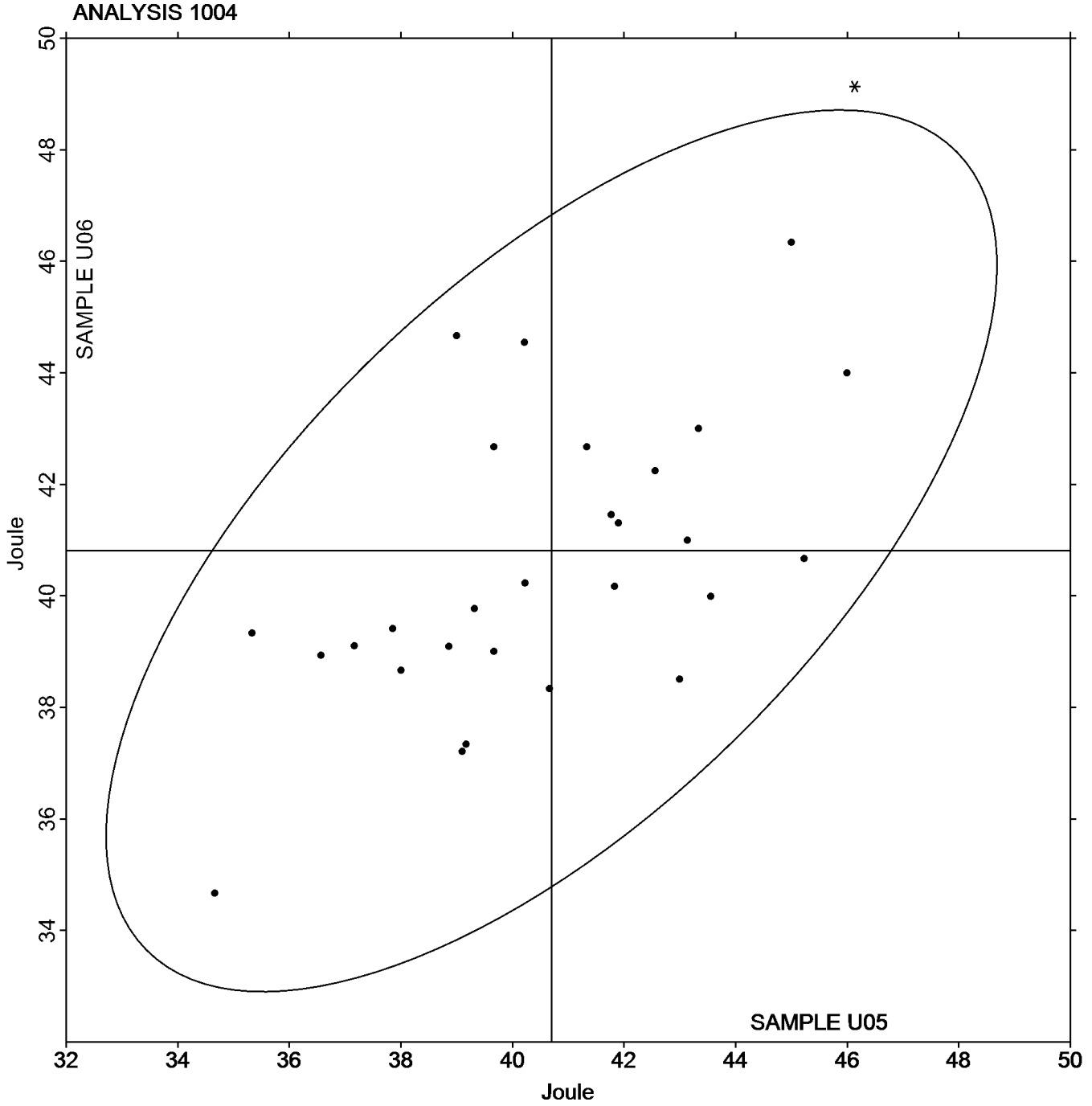
ASTM E23

SAMPLE U05

40.70 Joule

SAMPLE U06

40.81 Joule





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
27HTPP		99.50	0.84	0.34	119.00	1.76	0.35
2FXDML		98.80	0.14	0.06	120.00	2.76	0.55
2LWY3A		100.20	1.54	0.62	114.30	-2.94	-0.59
2M9VAY		97.50	-1.16	-0.47	122.50	5.26	1.05
2VCG9G		99.22	0.56	0.22	114.70	-2.54	-0.51
37Z2DJ		100.69	2.03	0.82	114.80	-2.44	-0.49
49K9FR		99.40	0.74	0.30	115.00	-2.24	-0.45
4ABC7D		98.74	0.07	0.03	127.00	9.75	1.95
4EARGM	X	68.51	-30.15	-12.16	67.35	-49.89	-9.98
4H92RN		97.90	-0.76	-0.31	112.70	-4.54	-0.91
4UG4RC		98.90	0.24	0.10	120.90	3.66	0.73
4VUE4X		97.76	-0.91	-0.37	128.94	11.70	2.34
4W7DVL		99.00	0.34	0.14	119.00	1.76	0.35
66D8UL		103.08	4.42	1.78	113.65	-3.59	-0.72
6GAHZ8		96.52	-2.14	-0.86	114.86	-2.38	-0.48
6ZDTGP		96.86	-1.81	-0.73	121.38	4.14	0.83
72AWDC		98.61	-0.05	-0.02	115.55	-1.69	-0.34
7CUABM		97.20	-1.46	-0.59	127.00	9.76	1.95
7JWGUV		98.38	-0.28	-0.11	118.86	1.62	0.32
7R7WLP		99.63	0.97	0.39	111.53	-5.71	-1.14
7TXY8J		100.99	2.33	0.94	112.32	-4.92	-0.99
7VZDNC		99.50	0.84	0.34	117.90	0.66	0.13
8JPMPF		98.70	0.04	0.01	112.43	-4.81	-0.96
8QBKHA		99.00	0.34	0.14	116.90	-0.34	-0.07
8V4LH3		97.01	-1.65	-0.67	111.44	-5.80	-1.16
8YVL8D		98.83	0.17	0.07	129.68	12.44	2.49
979U9E		101.28	2.62	1.06	120.62	3.37	0.68
97WP2M		98.45	-0.21	-0.09	124.39	7.14	1.43
9H9TMK		95.70	-2.96	-1.20	112.50	-4.74	-0.95
9J4DC6		94.46	-4.20	-1.69	113.99	-3.26	-0.65
AJ3Z9A		101.38	2.72	1.10	111.97	-5.27	-1.05
AKXJAB		98.07	-0.60	-0.24	127.75	10.51	2.10
AQZREH	*	102.20	3.54	1.43	128.00	10.76	2.15
AU2V76		96.60	-2.06	-0.83	123.00	5.76	1.15
B36BLC		100.52	1.86	0.75	117.13	-0.12	-0.02
CBW737		100.37	1.70	0.69	112.41	-4.84	-0.97
CP249R	X	115.00	16.34	6.59	116.00	-1.24	-0.25
CVM2XF		100.10	1.44	0.58	122.40	5.16	1.03
D3L4G7		99.93	1.27	0.51	112.12	-5.13	-1.03
DRZY8L	M	No Data Reported			118.88	1.64	0.33
E486XD		92.92	-5.74	-2.31	112.24	-5.00	-1.00
E6LUZQ		96.89	-1.78	-0.72	127.88	10.64	2.13
EE4N7M		102.12	3.46	1.40	115.84	-1.40	-0.28
EPR7TD		99.70	1.04	0.42	113.70	-3.54	-0.71
ETNTJF		99.96	1.30	0.52	113.10	-4.14	-0.83
F3AUAJ	*	102.94	4.27	1.72	129.10	11.86	2.37
G2D36V		101.82	3.15	1.27	113.28	-3.97	-0.79



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GAZU2G		97.80	-0.86	-0.35	114.00	-3.24	-0.65
GN9YJ2		103.09	4.42	1.78	114.40	-2.84	-0.57
GUWP4B		98.34	-0.33	-0.13	113.57	-3.68	-0.74
GZMYE9		101.41	2.75	1.11	113.25	-4.00	-0.80
HGQTK9	*	91.90	-6.76	-2.73	111.80	-5.44	-1.09
HHGWCU	X	133.48	34.81	14.04	119.25	2.01	0.40
J2G6GY		100.32	1.66	0.67	113.65	-3.59	-0.72
J4WWY2		94.10	-4.56	-1.84	121.00	3.76	0.75
JQZKVG		101.30	2.64	1.06	116.01	-1.23	-0.25
JV2Y67	X	67.68	-30.98	-12.50	66.67	-50.57	-10.12
KLZWRE		98.90	0.24	0.10	116.20	-1.04	-0.21
KVZJC7		101.20	2.54	1.02	112.30	-4.94	-0.99
KZM4Q2		97.30	-1.37	-0.55	121.24	4.00	0.80
L6VNCD	X	78.60	-20.06	-8.09	120.60	3.36	0.67
LFZYCU		97.76	-0.91	-0.37	119.08	1.84	0.37
LKR7TH		100.76	2.10	0.84	116.47	-0.78	-0.16
LKWMQF		97.03	-1.63	-0.66	118.93	1.69	0.34
LWP9UQ		99.10	0.44	0.18	114.90	-2.34	-0.47
M9BED2	X	109.60	10.94	4.41	126.40	9.16	1.83
MNCFJU		101.30	2.64	1.06	116.70	-0.54	-0.11
N9VYRH		98.05	-0.62	-0.25	122.70	5.46	1.09
NF9XF3	X	69.12	-29.54	-11.91	65.36	-51.88	-10.38
NGMEE2		100.00	1.34	0.54	114.40	-2.84	-0.57
NK6GL8		95.68	-2.98	-1.20	114.09	-3.15	-0.63
NKMQB2		102.51	3.85	1.55	113.57	-3.68	-0.74
P48J7A		99.90	1.24	0.50	118.24	0.99	0.20
P8ULJF		96.80	-1.86	-0.75	121.00	3.76	0.75
P8XVU2	X	68.41	-30.25	-12.20	65.25	-51.99	-10.40
PEWDBY		96.67	-1.99	-0.80	114.16	-3.08	-0.62
PHT4D4	X	83.70	-14.96	-6.03	102.00	-15.24	-3.05
PJ8LEN		94.95	-3.71	-1.50	112.90	-4.34	-0.87
Q2XUJR		95.00	-3.66	-1.48	113.20	-4.04	-0.81
Q6J4YP		102.00	3.34	1.35	125.00	7.76	1.55
QC47YZ		98.50	-0.16	-0.07	113.00	-4.24	-0.85
QLP6WX		97.60	-1.06	-0.43	126.00	8.76	1.75
R3B8RR		98.77	0.11	0.04	112.99	-4.26	-0.85
R9XZ4R		98.63	-0.04	-0.01	113.13	-4.11	-0.82
RDCGV4		103.00	4.34	1.75	116.00	-1.24	-0.25
RT8Z7Z	*	91.80	-6.86	-2.77	121.00	3.76	0.75
RTAJJ4		98.68	0.02	0.01	110.99	-6.25	-1.25
RWHLT8		98.05	-0.61	-0.25	126.00	8.76	1.75
RZ4XVN		96.93	-1.73	-0.70	114.80	-2.44	-0.49
TDLFZ7	X	119.00	20.34	8.20	94.10	-23.14	-4.63
TL3FM2		100.40	1.74	0.70	114.60	-2.64	-0.53
TXHB32		99.20	0.54	0.22	118.40	1.16	0.23
UQQP7Y		98.20	-0.47	-0.19	116.75	-0.49	-0.10
UTVNFZ		99.24	0.57	0.23	114.86	-2.39	-0.48



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
V3K47V	X	64.50	-34.16	-13.78	59.90	-57.34	-11.47
VDYDAE		100.04	1.38	0.56	113.81	-3.44	-0.69
VFMPB7	*	92.67	-5.99	-2.42	111.01	-6.23	-1.25
VJAC4T		100.80	2.14	0.86	115.80	-1.44	-0.29
VU2QGP		100.43	1.77	0.71	115.49	-1.75	-0.35
W7FCPV		94.00	-4.66	-1.88	111.00	-6.24	-1.25
WAH7R8		97.30	-1.36	-0.55	123.20	5.96	1.19
WBRKTL		96.79	-1.88	-0.76	122.94	5.69	1.14
WLW3UP		96.07	-2.59	-1.05	113.02	-4.22	-0.84
WXNWZR		102.26	3.60	1.45	115.54	-1.70	-0.34
XC2MHQ		96.30	-2.36	-0.95	121.00	3.76	0.75
XCJV8L		98.77	0.11	0.04	113.28	-3.97	-0.79
XD94BU		96.78	-1.89	-0.76	119.84	2.60	0.52
XXCHH3		99.67	1.01	0.41	120.99	3.75	0.75
XZ92EG		101.70	3.04	1.22	128.10	10.86	2.17
Y4DUFK		94.02	-4.64	-1.87	113.49	-3.76	-0.75
Y6XZ4W	X	89.60	-9.06	-3.65	113.78	-3.46	-0.69
YEJ7WT		97.60	-1.06	-0.43	114.00	-3.24	-0.65
YTX2QP		99.20	0.54	0.22	111.80	-5.44	-1.09
YY33NY		95.60	-3.06	-1.24	113.60	-3.64	-0.73
Z2LE3U		102.52	3.86	1.56	115.57	-1.67	-0.33
Z9EN2E		100.00	1.34	0.54	116.00	-1.24	-0.25
ZHYZDQ	X	46.41	-52.25	-21.07	47.86	-69.38	-13.88
ZPR26J		99.00	0.33	0.13	118.68	1.43	0.29

Summary Statistics				
	Sample F05		Sample F06	
Grand Means	98.66	ksi	117.24	ksi
Stnd Dev Brwn Labs	2.48	ksi	5.00	ksi

Samples F05, F06 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 104 of 118 reporting participants



Comments on Assigned Data Flags for Test #1131

4EARGM (X) - Data for both samples are low.

CP249R (X) - Data for sample F05 are high.

DRZY8L (M) - Participant did not submit data for sample F05.

HHGWCU (X) - Data for sample F05 are high.

JV2Y67 (X) - Data for both samples are low.

L6VNCD (X) - Data for sample F05 are low.

M9BED2 (X) - Data for sample F05 are high.

NF9XF3 (X) - Data for both samples are low.

P8XVU2 (X) - Data for both samples are low.

PHT4D4 (X) - Data for both samples are low.

TDLFZ7 (X) - Data for sample F05 are high and data for sample F06 are low.

V3K47V (X) - Data for both samples are low.

Y6XZ4W (X) - Data for sample F05 are low.

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



Analysis 1131

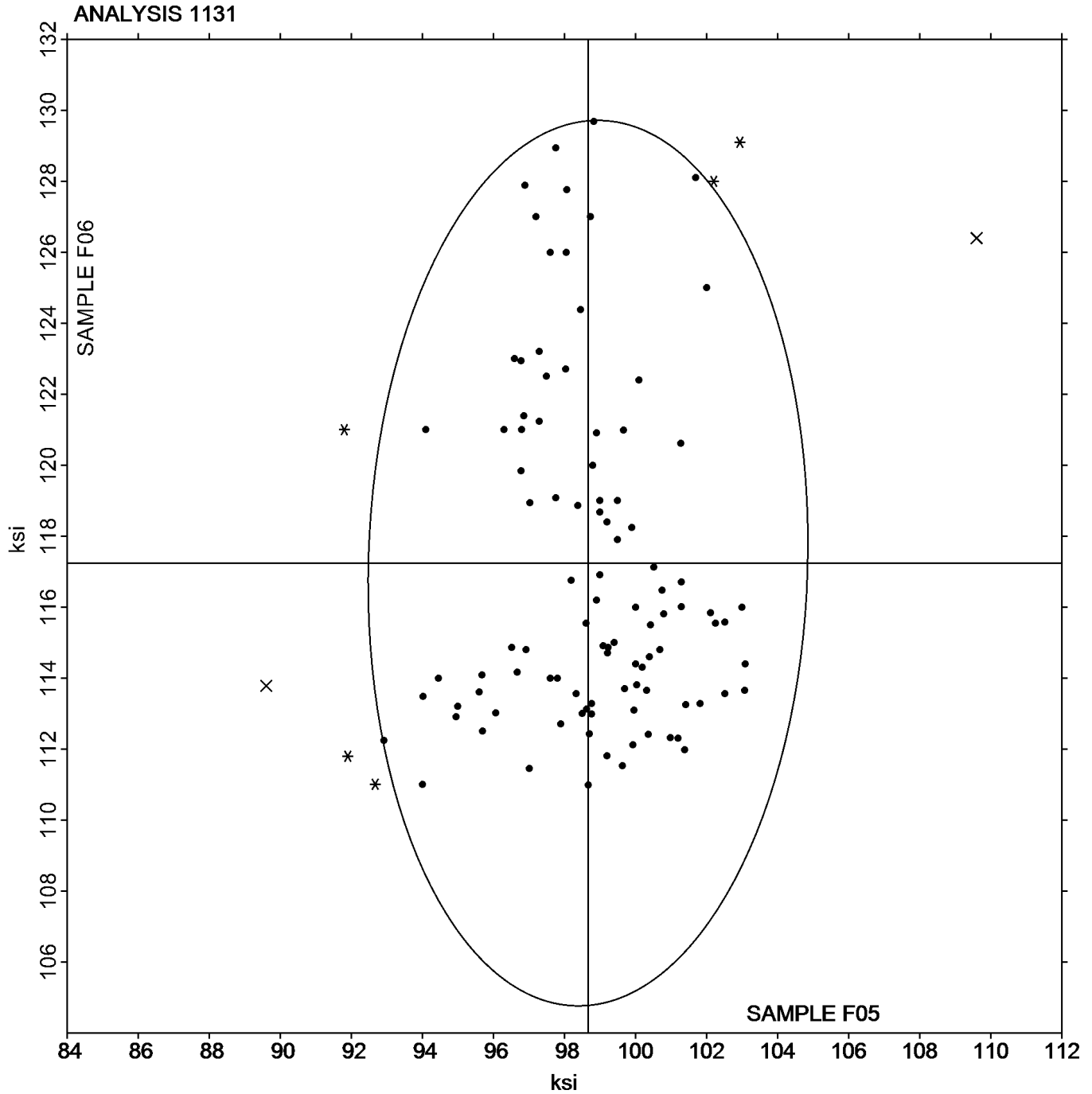
Tensile Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F05

SAMPLE F06

98.66 ksi

117.24 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
27HTPP		80.80	0.24	0.08	84.00	2.46	0.38
2FXDML		78.40	-2.16	-0.72	82.30	0.76	0.12
2LWY3A		82.70	2.14	0.71	77.30	-4.24	-0.66
2M9VAY		77.75	-2.81	-0.94	87.25	5.71	0.89
2VCG9G		82.18	1.62	0.54	76.89	-4.65	-0.73
37Z2DJ		79.77	-0.79	-0.26	76.54	-5.00	-0.78
49K9FR		84.00	3.44	1.14	78.80	-2.74	-0.43
4ABC7D		81.11	0.55	0.18	96.55	15.01	2.34
4H92RN		81.40	0.84	0.28	76.70	-4.84	-0.76
4UG4RC		81.60	1.04	0.35	85.50	3.96	0.62
4VUE4X	*	78.32	-2.24	-0.75	98.19	16.65	2.60
4W7DVL		81.30	0.74	0.25	83.70	2.16	0.34
66D8UL		84.67	4.11	1.37	78.86	-2.68	-0.42
6GAHZ8		77.38	-3.18	-1.06	76.81	-4.72	-0.74
6ZDTGP		82.47	1.91	0.63	88.23	6.69	1.04
72AWDC		81.31	0.75	0.25	78.49	-3.05	-0.48
7CUABM		77.00	-3.56	-1.19	95.90	14.36	2.24
7JWGUU		78.28	-2.28	-0.76	82.92	1.38	0.22
7R7WLP		82.41	1.85	0.62	75.51	-6.03	-0.94
7TXY8J		85.99	5.43	1.81	76.64	-4.90	-0.77
7VZDNC		84.70	4.14	1.38	84.30	2.76	0.43
8JPMPF	X	95.47	14.91	4.96	91.30	9.76	1.52
8QBKHA		76.50	-4.06	-1.35	80.40	-1.14	-0.18
8V4LH3		83.04	2.48	0.82	77.22	-4.32	-0.67
8YVL8D	*	80.37	-0.20	-0.07	99.51	17.97	2.81
979U9E		79.34	-1.22	-0.41	78.01	-3.53	-0.55
97WP2M		76.46	-4.10	-1.36	93.68	12.14	1.90
9H9TMK		76.50	-4.06	-1.35	75.50	-6.04	-0.94
9J4DC6		76.68	-3.88	-1.29	77.33	-4.20	-0.66
AJ3Z9A		80.50	-0.07	-0.02	75.57	-5.97	-0.93
AKXJAB		75.72	-4.85	-1.61	92.89	11.36	1.77
AQZREH	X	94.00	13.44	4.47	97.60	16.06	2.51
AU2V76		79.10	-1.46	-0.49	89.60	8.06	1.26
B36BLC		85.95	5.39	1.79	80.64	-0.90	-0.14
CBW737		78.32	-2.24	-0.75	76.58	-4.96	-0.77
CP249R		76.00	-4.56	-1.52	77.00	-4.54	-0.71
CVM2XF		80.10	-0.46	-0.15	86.80	5.26	0.82
D3L4G7		79.77	-0.79	-0.26	73.97	-7.57	-1.18
DRZY8L	M	No Data Reported			80.23	-1.31	-0.20
E486XD		77.84	-2.72	-0.91	80.49	-1.05	-0.16
E6LUZQ	X	90.00	9.44	3.14	100.00	18.46	2.88
EE4N7M		80.11	-0.45	-0.15	78.30	-3.24	-0.51
EPR7TD		81.50	0.94	0.31	77.40	-4.14	-0.65
ETNTJF		83.39	2.83	0.94	77.08	-4.46	-0.70
F3AUAJ	*	84.59	4.02	1.34	96.25	14.71	2.30
G2D36V		81.95	1.38	0.46	76.44	-5.10	-0.80
GAZU2G		78.00	-2.56	-0.85	78.20	-3.34	-0.52



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GUWP4B		79.05	-1.52	-0.50	76.44	-5.10	-0.80
GZMYE9		83.59	3.02	1.01	77.00	-4.54	-0.71
HGQTK9	X	89.40	8.84	2.94	111.80	30.26	4.73
HHGWCU	X	108.01	27.45	9.14	83.90	2.36	0.37
J2G6GY		84.20	3.63	1.21	76.93	-4.61	-0.72
J4WWY2		79.10	-1.46	-0.49	89.80	8.26	1.29
JQZKVG		79.72	-0.84	-0.28	77.83	-3.71	-0.58
KLZWRE		81.60	1.04	0.35	79.87	-1.67	-0.26
KVZJC7		78.70	-1.86	-0.62	75.10	-6.44	-1.01
KZM4Q2		78.95	-1.61	-0.54	91.48	9.95	1.55
L6VNCD	X	62.00	-18.56	-6.18	87.00	5.46	0.85
LFZYCU		77.74	-2.82	-0.94	85.28	3.75	0.58
LKR7TH		78.48	-2.08	-0.69	77.71	-3.83	-0.60
LKWMQF		77.45	-3.11	-1.04	82.53	0.99	0.15
LWP9UQ		84.60	4.04	1.34	79.60	-1.94	-0.30
M9BED2	X	92.80	12.24	4.07	90.30	8.76	1.37
MNCFJU		82.90	2.34	0.78	79.90	-1.64	-0.26
N9VYRH		80.64	0.08	0.03	92.53	11.00	1.72
NF9XF3	X	57.80	-22.76	-7.58	70.69	-10.85	-1.69
NGMEE2		80.50	-0.06	-0.02	77.40	-4.14	-0.65
NK6GL8		78.57	-2.00	-0.66	77.91	-3.62	-0.57
NKMQB2		87.10	6.53	2.17	77.13	-4.41	-0.69
P48J7A		84.07	3.51	1.17	83.08	1.54	0.24
P8ULJF		76.70	-3.86	-1.29	84.50	2.96	0.46
P8XVU2	X	54.31	-26.25	-8.74	62.61	-18.93	-2.96
PEWDBY		79.63	-0.94	-0.31	78.76	-2.78	-0.43
PHT4D4		78.70	-1.86	-0.62	83.70	2.16	0.34
PJ8LEN		77.14	-3.42	-1.14	77.95	-3.59	-0.56
Q2XUJR		79.20	-1.36	-0.45	77.00	-4.54	-0.71
Q6J4YP		83.90	3.34	1.11	91.30	9.76	1.52
QC47YZ		79.10	-1.46	-0.49	77.60	-3.94	-0.61
QLP6WX		80.00	-0.56	-0.19	94.60	13.06	2.04
R3B8RR		77.45	-3.11	-1.04	76.44	-5.10	-0.80
R9XZ4R		77.31	-3.26	-1.08	75.86	-5.68	-0.89
RDCGV4	*	88.70	8.14	2.71	74.80	-6.74	-1.05
RT8Z7Z	X	69.90	-10.66	-3.55	92.10	10.56	1.65
RTAJJ4		84.20	3.64	1.21	76.89	-4.65	-0.73
RWHLT8		81.05	0.49	0.16	93.50	11.96	1.87
RZ4XVN		78.07	-2.49	-0.83	77.96	-3.58	-0.56
TDLFZ7		85.90	5.34	1.78	78.10	-3.44	-0.54
TL3FM2		82.80	2.24	0.74	78.10	-3.44	-0.54
TXHB32		82.90	2.34	0.78	83.90	2.36	0.37
UQQP7Y		78.14	-2.42	-0.81	81.12	-0.42	-0.07
UTVNFZ		80.63	0.06	0.02	78.00	-3.54	-0.55
V3K47V	X	50.82	-29.74	-9.90	39.39	-42.15	-6.58
VDYDAE		82.39	1.82	0.61	76.73	-4.81	-0.75
VFMPB7		79.23	-1.33	-0.44	77.40	-4.14	-0.65



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VJAC4T		84.60	4.04	1.34	79.10	-2.44	-0.38
VU2QGP		80.13	-0.43	-0.14	78.68	-2.85	-0.45
W7FCPV		74.70	-5.86	-1.95	74.70	-6.84	-1.07
WAH7R8	X	87.40	6.84	2.28	98.70	17.16	2.68
WBRKTL		79.53	-1.03	-0.34	89.76	8.23	1.28
WLW3UP		78.56	-2.00	-0.67	76.34	-5.20	-0.81
WXNWZR	*	88.94	8.38	2.79	79.14	-2.40	-0.37
XC2MHQ		77.80	-2.76	-0.92	86.80	5.26	0.82
XCJV8L		78.18	-2.39	-0.79	77.89	-3.65	-0.57
XD94BU		77.13	-3.44	-1.14	83.52	1.98	0.31
XXCHH3	X	86.54	5.97	1.99	107.08	25.55	3.99
XZ92EG		82.40	1.84	0.61	95.70	14.16	2.21
Y4DUFK		77.48	-3.09	-1.03	76.95	-4.59	-0.72
Y6XZ4W	X	69.69	-10.87	-3.62	82.49	0.96	0.15
YEJ7WT	M	80.50	-0.06	-0.02	No Data Reported		
YTX2QP		84.60	4.04	1.34	75.80	-5.74	-0.90
YY33NY		78.50	-2.06	-0.69	76.80	-4.74	-0.74
Z2LE3U		84.00	3.44	1.14	80.40	-1.14	-0.18
Z9EN2E		80.50	-0.06	-0.02	78.80	-2.74	-0.43
ZHYZDQ	X	34.81	-45.75	-15.23	33.36	-48.18	-7.52
ZPR26J		82.73	2.17	0.72	88.37	6.83	1.07

Summary Statistics				
	Sample F05		Sample F06	
Grand Means	80.56	ksi	81.54	ksi
Stnd Dev Btwn Labs	3.00	ksi	6.40	ksi

Samples F05, F06 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 98 of 115 reporting participants



Comments on Assigned Data Flags for Test #1132

- 8JPMPP (X) - Data for sample F05 are high.
- AQZREH (X) - Data for sample F05 are high.
- DRZY8L (M) - Participant did not submit data for sample F05.
- E6LUZQ (X) - Data for both samples are high.
- HGQTK9 (X) - Data for both samples are high.
- HHGWCU (X) - Data for sample F05 are high.
- L6VNCD (X) - Data for sample F05 are low.
- M9BED2 (X) - Data for sample F05 are high.
- NF9XF3 (X) - Data for sample F05 are low.
- P8XVU2 (X) - Data for both samples are low.
- RT8Z7Z (X) - Data for sample F05 are low.
- V3K47V (X) - Data for both samples are low.
- WAH7R8 (X) - Inconsistent in testing between samples.
- XXCHH3 (X) - Data for sample F06 are high.
- Y6XZ4W (X) - Data for sample F05 are low.
- YEJ7WT (M) - Participant did not submit data for sample F06.
- ZHYZDQ (X) - Data for both samples are low.



Analysis 1132

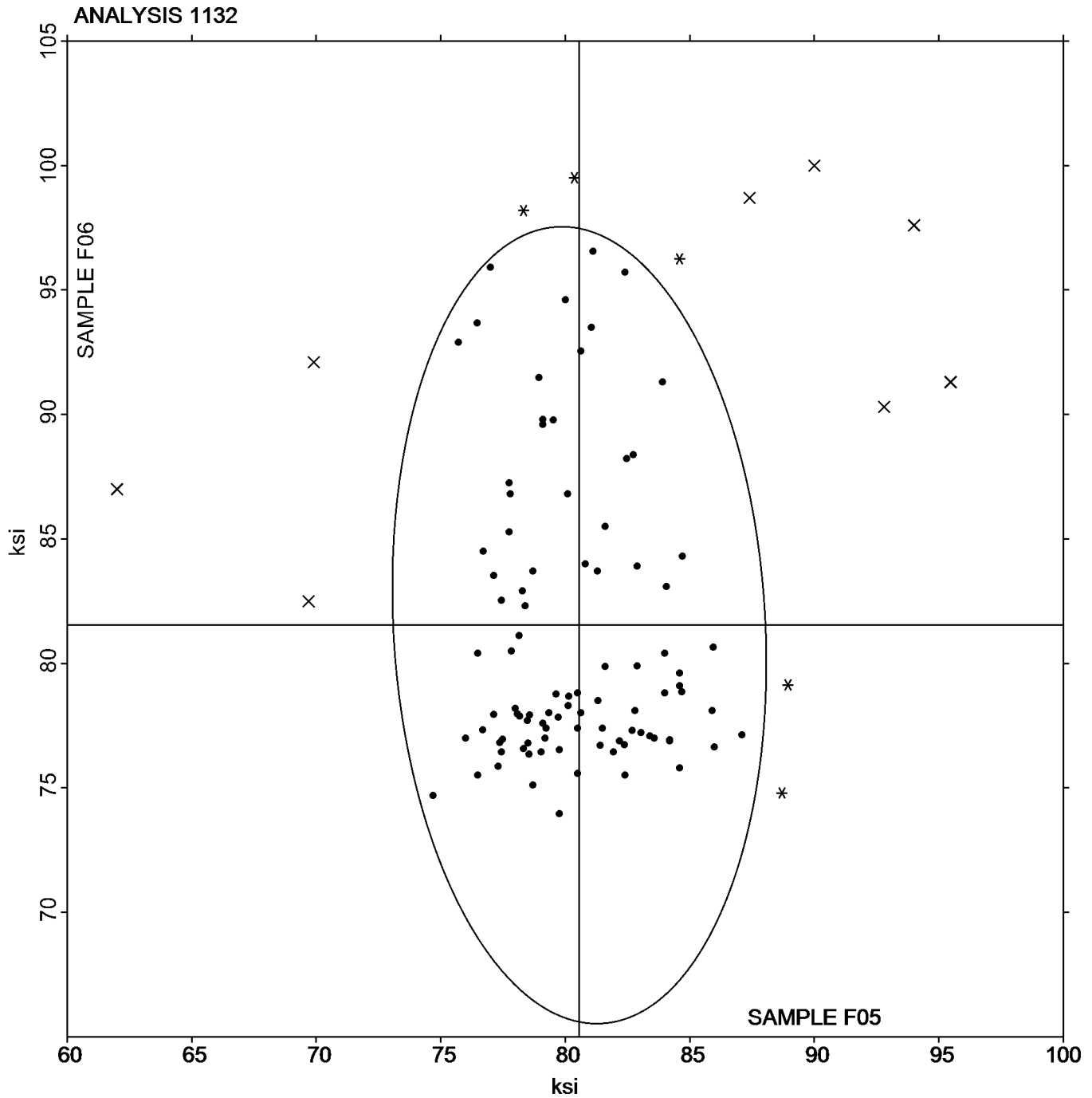
Yield Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F05

SAMPLE F06

80.56 ksi

81.54 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
27HTPP		17.80	0.54	0.38	17.30	0.43	0.32
2FXDML		18.50	1.24	0.88	19.00	2.13	1.58
2LWY3A		15.40	-1.86	-1.32	16.90	0.03	0.02
2M9VAY		18.00	0.74	0.53	17.00	0.13	0.10
2VCG9G		17.71	0.45	0.32	18.29	1.42	1.05
37Z2DJ		18.13	0.87	0.62	16.70	-0.17	-0.13
49K9FR		15.70	-1.56	-1.11	16.30	-0.57	-0.42
4ABC7D		17.84	0.58	0.41	16.07	-0.80	-0.59
4EARGM	X	22.40	5.14	3.65	21.38	4.51	3.35
4H92RN		15.50	-1.76	-1.25	17.00	0.13	0.10
4UG4RC		17.60	0.34	0.24	16.50	-0.37	-0.27
4VUE4X		17.20	-0.06	-0.04	15.00	-1.87	-1.39
4W7DVL		17.50	0.24	0.17	19.50	2.63	1.95
66D8UL		16.80	-0.46	-0.33	16.10	-0.77	-0.57
6GAHZ8		17.60	0.34	0.24	17.60	0.73	0.54
6ZDTGP		18.50	1.24	0.88	16.70	-0.17	-0.13
72AWDC		17.00	-0.26	-0.19	18.00	1.13	0.84
7CUABM	X	12.50	-4.76	-3.38	11.20	-5.67	-4.20
7JWGUU		17.44	0.17	0.12	16.74	-0.13	-0.10
7R7WLP		17.55	0.29	0.21	18.07	1.20	0.89
7TXY8J		16.80	-0.46	-0.33	17.40	0.53	0.39
7VZDNC		18.50	1.24	0.88	19.40	2.53	1.88
8JPMPF	X	10.37	-6.89	-4.90	17.90	1.03	0.76
8QBKHA		16.80	-0.46	-0.33	16.10	-0.77	-0.57
8V4LH3		18.50	1.24	0.88	16.60	-0.27	-0.20
8YVL8D		15.00	-2.26	-1.61	13.90	-2.97	-2.20
979U9E		16.30	-0.96	-0.68	18.38	1.51	1.12
97WP2M		17.60	0.34	0.24	14.90	-1.97	-1.46
9H9TMK		18.10	0.84	0.60	18.80	1.93	1.43
9J4DC6		18.70	1.44	1.02	17.20	0.33	0.25
AJ3Z9A		16.80	-0.46	-0.33	17.70	0.83	0.62
AKXJAB		19.40	2.14	1.52	16.20	-0.67	-0.50
AQZREH		16.40	-0.86	-0.61	13.70	-3.17	-2.35
AU2V76		17.00	-0.26	-0.19	16.00	-0.87	-0.64
B36BLC		18.75	1.49	1.06	19.70	2.83	2.10
CBW737		16.20	-1.06	-0.75	18.20	1.33	0.99
CP249R		16.00	-1.26	-0.90	15.00	-1.87	-1.39
CVM2XF		19.10	1.84	1.31	18.50	1.63	1.21
D3L4G7		17.40	0.14	0.10	18.10	1.23	0.91
DRZY8L	M	No Data Reported			16.94	0.07	0.05
E486XD		18.50	1.24	0.88	17.40	0.53	0.39
E6LUZQ		16.50	-0.76	-0.54	14.90	-1.97	-1.46
EE4N7M		17.00	-0.26	-0.19	17.30	0.43	0.32
EPR7TD		17.60	0.34	0.24	18.30	1.43	1.06
ETNTJF		13.90	-3.36	-2.39	16.00	-0.87	-0.64
F3AUAJ		17.30	0.04	0.03	16.00	-0.87	-0.64
G2D36V		18.60	1.34	0.95	17.11	0.24	0.18



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GAZU2G		18.40	1.14	0.81	19.60	2.73	2.03
GN9YJ2		17.24	-0.02	-0.02	16.57	-0.30	-0.22
GUWP4B		15.90	-1.36	-0.97	15.90	-0.97	-0.72
GZMYE9		16.40	-0.86	-0.61	15.90	-0.97	-0.72
HGQTK9	X	10.00	-7.26	-5.16	8.000	-8.87	-6.58
HHGWCU	X	22.18	4.92	3.50	23.24	6.37	4.73
J2G6GY		16.90	-0.36	-0.26	17.40	0.53	0.39
J4WWY2		19.50	2.24	1.59	16.60	-0.27	-0.20
JQZKVG		17.60	0.34	0.24	17.20	0.33	0.25
JV2Y67	X	22.12	4.86	3.45	17.83	0.96	0.71
KLZWRE		18.30	1.04	0.74	17.00	0.13	0.10
KVZJC7		17.00	-0.26	-0.19	18.00	1.13	0.84
KZM4Q2		17.04	-0.22	-0.16	16.07	-0.80	-0.59
L6VNCD		17.00	-0.26	-0.19	15.00	-1.87	-1.39
LFZYCU	X	6.800	-10.46	-7.43	10.20	-6.67	-4.95
LKR7TH		17.30	0.04	0.03	17.50	0.63	0.47
LKWMQF	*	20.00	2.74	1.95	20.00	3.13	2.32
LWP9UQ		17.60	0.34	0.24	17.50	0.63	0.47
M9BED2		15.00	-2.26	-1.61	16.30	-0.57	-0.42
MNCFJU		16.20	-1.06	-0.75	16.10	-0.77	-0.57
N9VYRH	X	13.00	-4.26	-3.03	9.000	-7.87	-5.84
NF9XF3	*	20.92	3.66	2.60	17.82	0.95	0.71
NGMEE2		17.10	-0.16	-0.11	17.40	0.53	0.39
NK6GL8		17.75	0.49	0.35	16.84	-0.03	-0.02
NKMQB2		14.00	-3.26	-2.32	15.60	-1.27	-0.94
P48J7A		18.10	0.84	0.60	18.80	1.93	1.43
P8ULJF		16.80	-0.46	-0.33	16.00	-0.87	-0.64
P8XVU2	X	21.20	3.94	2.80	22.30	5.43	4.03
PEWDBY		17.56	0.30	0.21	16.67	-0.20	-0.15
PHT4D4		14.80	-2.46	-1.75	16.20	-0.67	-0.50
PJ8LEN		14.35	-2.91	-2.07	16.85	-0.02	-0.01
Q2XUJR	*	21.00	3.74	2.66	17.50	0.63	0.47
Q6J4YP		16.60	-0.66	-0.47	15.60	-1.27	-0.94
QC47YZ	X	20.80	3.54	2.52	13.50	-3.37	-2.50
QLP6WX		17.20	-0.06	-0.04	15.20	-1.67	-1.24
R3B8RR		18.20	0.94	0.67	16.70	-0.17	-0.13
R9XZ4R		18.60	1.34	0.95	17.30	0.43	0.32
RDCGV4		15.50	-1.76	-1.25	18.00	1.13	0.84
RT8Z7Z	X	12.90	-4.36	-3.10	12.80	-4.07	-3.02
RTAJJ4	X	8.300	-8.96	-6.37	12.41	-4.46	-3.31
RWHLT8		17.80	0.54	0.38	15.90	-0.97	-0.72
TDLFZ7		17.00	-0.26	-0.19	14.00	-2.87	-2.13
TL3FM2		16.50	-0.76	-0.54	18.50	1.63	1.21
TXHB32		18.20	0.94	0.67	17.80	0.93	0.69
UQQP7Y	X	13.50	-3.76	-2.67	11.30	-5.57	-4.13
UTVNFZ		17.70	0.44	0.31	17.30	0.43	0.32
V3K47V	X	20.62	3.36	2.39	21.10	4.23	3.14



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VDYDAE		16.80	-0.46	-0.33	17.30	0.43	0.32
VFMPB7	X	12.54	-4.72	-3.36	12.31	-4.56	-3.38
VJAC4T		16.80	-0.46	-0.33	17.20	0.33	0.25
VU2QGP		17.05	-0.21	-0.15	17.65	0.78	0.58
W7FCPV	X	14.00	-3.26	-2.32	10.50	-6.37	-4.72
WAH7R8		18.20	0.94	0.67	15.90	-0.97	-0.72
WBRKTL		17.99	0.73	0.52	16.94	0.07	0.05
WLW3UP		16.62	-0.64	-0.46	17.00	0.13	0.10
WXNWZR		16.56	-0.70	-0.50	16.81	-0.06	-0.04
XC2MHQ		17.20	-0.06	-0.04	15.60	-1.27	-0.94
XCJV8L		17.50	0.24	0.17	17.60	0.73	0.54
XD94BU		15.20	-2.06	-1.46	14.02	-2.85	-2.11
XXCHH3	*	14.60	-2.66	-1.89	13.70	-3.17	-2.35
XZ92EG		16.50	-0.76	-0.54	16.20	-0.67	-0.50
Y4DUFK		19.37	2.10	1.50	18.91	2.04	1.51
Y6XZ4W		18.28	1.02	0.72	15.50	-1.37	-1.02
YEJ7WT	X	11.70	-5.56	-3.95	10.80	-6.07	-4.50
YTX2QP		17.00	-0.26	-0.19	18.20	1.33	0.99
YY33NY		16.00	-1.26	-0.90	17.00	0.13	0.10
Z2LE3U		18.00	0.74	0.53	15.60	-1.27	-0.94
Z9EN2E	*	13.50	-3.76	-2.67	14.70	-2.17	-1.61
ZHYZDQ	X	37.00	19.74	14.03	38.00	21.13	15.67
ZPR26J	*	20.80	3.54	2.52	17.15	0.28	0.21

Summary Statistics

	Sample F05		Sample F06	
Grand Means	17.26	Percent	16.87	Percent
Stnd Dev Btwn Labs	1.41	Percent	1.35	Percent

Samples F05, F06 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 98 of 117 reporting participants



Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

Comments on Assigned Data Flags for Test #1133

- 4EARGM (X) - Data for both samples are high.
- 7CUABM (X) - Data for both samples are low.
- 8JPMPF (X) - Data for sample F05 are low.
- DRZY8L (M) - Participant did not submit data for sample F05.
- HGQTK9 (X) - Data for both samples are low.
- HHGWCU (X) - Data for both samples are high.
- JV2Y67 (X) - Data for sample F05 are high.
- LFZYCU (X) - Data for both samples are low.
- N9VYRH (X) - Data for both samples are low.
- P8XVU2 (X) - Data for both samples are high.
- QC47YZ (X) - Inconsistent in testing between samples.
- RT8Z7Z (X) - Data for both samples are low.
- RTAJJ4 (X) - Data for both samples are low.
- UQQP7Y (X) - Data for sample F06 are low.
- V3K47V (X) - Data for sample F06 are high.
- VFMPB7 (X) - Data for both samples are low.
- W7FCPV (X) - Data for sample F06 are low.
- YEJ7WT (X) - Data for both samples are low.
- ZHYZDQ (X) - Data for both samples are high.



Fasteners and Metals Interlaboratory Testing Program

Cycle 148

Analysis 1133

4th Qtr 2024

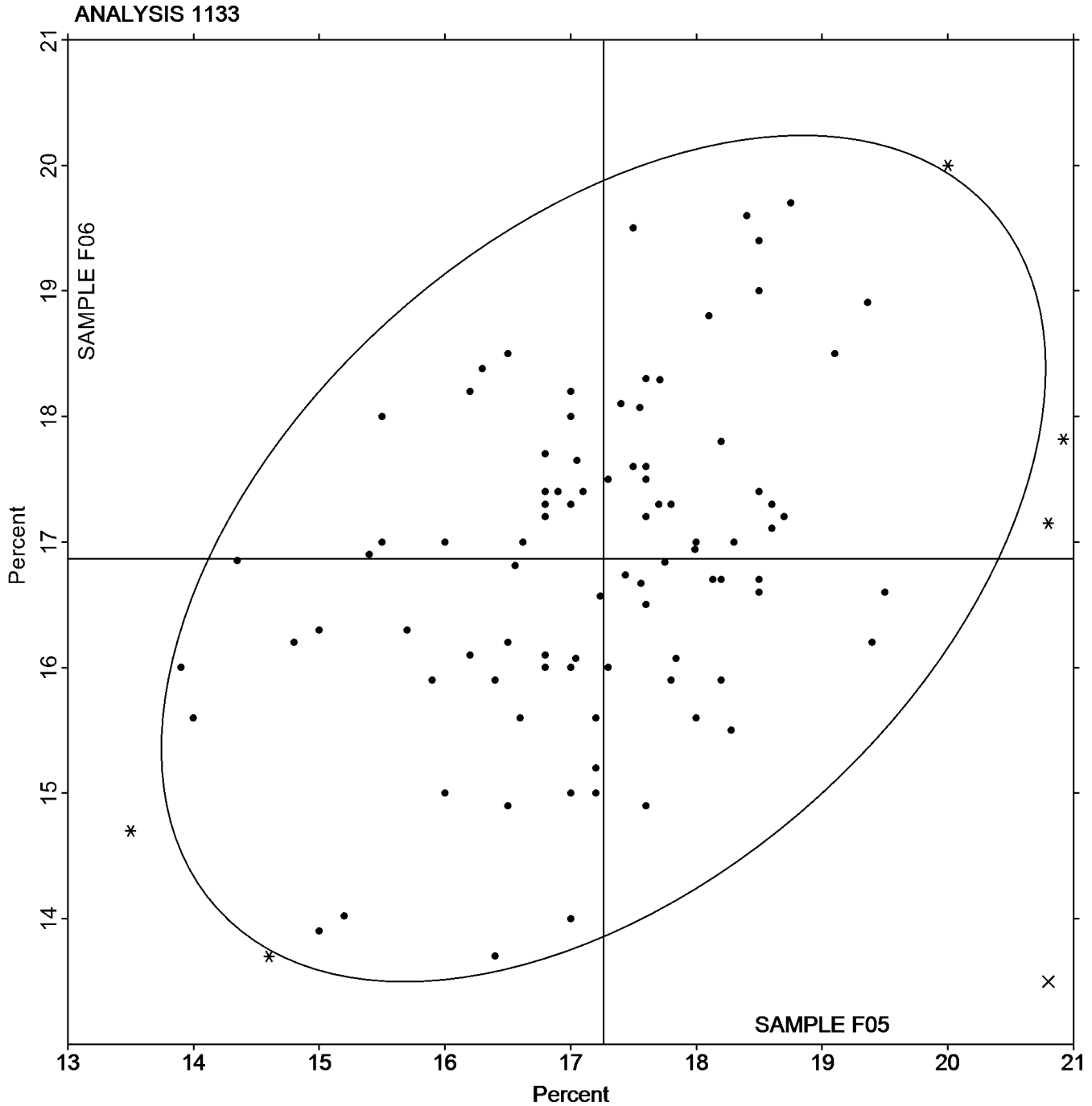
Elongation: Lab-Machined Flat Steel
ASTM E8

SAMPLE F05

17.26 Percent

SAMPLE F06

16.87 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1134

r-Value: Lab-Machined Flat Steel
ASTM E517

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2LWY3A		1.063	0.2997	2.19	0.8710	0.1225	1.43
66D8UL		0.7500	-0.0133	-0.10	0.7800	0.0315	0.37
7R7WLP		0.6857	-0.0776	-0.57	0.6783	-0.0702	-0.82
7VZDNC		0.8000	0.0367	0.27	0.7900	0.0415	0.48
8QBKHA	*	0.6900	-0.0733	-0.54	0.8400	0.0915	1.07
9J4DC6		0.8000	0.0367	0.27	0.8000	0.0515	0.60
AJ3Z9A		0.7330	-0.0303	-0.22	0.7340	-0.0145	-0.17
CBW737		0.7300	-0.0333	-0.24	0.7200	-0.0285	-0.33
D3L4G7		0.6820	-0.0813	-0.59	0.7310	-0.0175	-0.20
ETNTJF		1.040	0.2767	2.02	0.9000	0.1515	1.76
F3AUAJ	X	0.0970	-0.6663	-4.87	0.0700	-0.6785	-7.90
GZMYE9		0.7300	-0.0333	-0.24	0.7000	-0.0485	-0.57
J2G6GY		0.6230	-0.1403	-1.03	0.6240	-0.1245	-1.45
JQZKVG		0.7700	0.0067	0.05	0.7070	-0.0415	-0.48
KZM4Q2		0.6900	-0.0733	-0.54	0.7500	0.0015	0.02
LFZYCU		0.8000	0.0367	0.27	0.8000	0.0515	0.60
LKR7TH		0.7200	-0.0433	-0.32	0.8000	0.0515	0.60
NKMQB2		0.8800	0.1167	0.85	0.7700	0.0215	0.25
P48J7A		0.7400	-0.0233	-0.17	0.7100	-0.0385	-0.45
PHT4D4	*	0.5000	-0.2633	-1.93	0.5000	-0.2485	-2.90
Q2XUJR		0.7880	0.0247	0.18	0.8130	0.0645	0.75
R3B8RR		0.7500	-0.0133	-0.10	0.7300	-0.0185	-0.22
R9XZ4R		0.7500	-0.0133	-0.10	0.7300	-0.0185	-0.22
RWHLT8	X	0.0970	-0.6663	-4.87	0.0700	-0.6785	-7.90
TL3FM2		0.7660	0.0027	0.02	0.7070	-0.0415	-0.48
TXHB32		0.5090	-0.2543	-1.86	0.6100	-0.1385	-1.61
UTVNFZ		0.7182	-0.0451	-0.33	0.7495	0.0010	0.01
VDYDAE		0.8010	0.0377	0.28	0.7300	-0.0185	-0.22
VFMPB7	*	1.150	0.3867	2.83	0.9300	0.1815	2.11
WBRKTL		0.7100	-0.0533	-0.39	0.7700	0.0215	0.25
XCJV8L		0.7680	0.0047	0.03	0.7320	-0.0165	-0.19
ZHYZDQ	X	1.670	0.9067	6.63	1.650	0.9015	10.50

Summary Statistics

	Sample F05	Sample F06
Grand Means	0.7633	0.7485
Std Dev Brwn Labs	0.1368	0.0858

Samples F05, F06 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 29 of 32 reporting participants

Comments on Assigned Data Flags for Test #1134

F3AUAJ (X) - Data for both samples are low.

RWHLT8 (X) - Data for both samples are low.

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



Analysis 1134

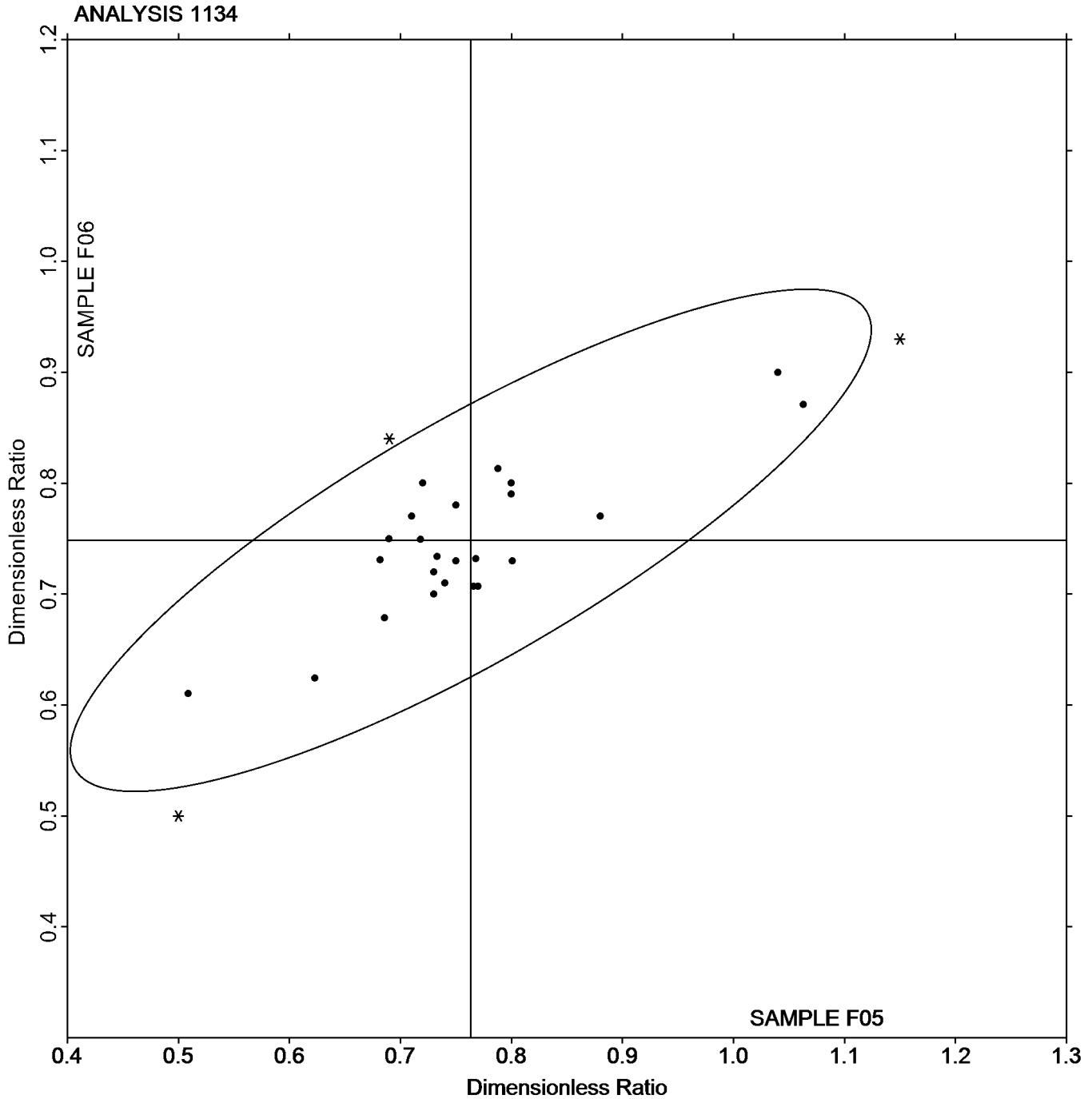
r-Value: Lab-Machined Flat Steel
ASTM E517

SAMPLE F05

SAMPLE F06

0.7633

0.7485





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1135

n-Value: Lab-Machined Flat Steel
ASTM E646

WebCode	Data Flag	Sample F05			Sample F06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2LWY3A		0.0620	-0.0032	-0.42	0.1390	0.0059	0.54
4UG4RC		0.0656	0.0004	0.05	0.1540	0.0210	1.91
66D8UL		0.0670	0.0018	0.23	0.1290	-0.0041	-0.37
6GAHZ8	M	No Data Reported			0.1100	-0.0231	-2.10
7R7WLP		0.0600	-0.0052	-0.69	0.1370	0.0039	0.36
7VZDNC		0.0600	-0.0052	-0.69	0.1130	-0.0201	-1.82
8QBKHA		0.0690	0.0038	0.50	0.1320	-0.0011	-0.10
8V4LH3	X	0.0730	0.0078	1.02	0.1820	0.0489	4.45
8YVL8D		0.0690	0.0038	0.50	0.1130	-0.0201	-1.82
9J4DC6		0.0790	0.0138	1.81	0.1450	0.0119	1.09
AJ3Z9A	M	No Data Reported			0.1290	-0.0041	-0.37
AKXJAB		0.0692	0.0040	0.52	0.1098	-0.0233	-2.12
CBW737		0.0600	-0.0052	-0.69	0.1300	-0.0031	-0.28
D3L4G7		0.0590	-0.0062	-0.82	0.1260	-0.0071	-0.64
EE4N7M		0.0600	-0.0052	-0.69	0.1240	-0.0091	-0.82
ETNTJF		0.0610	-0.0042	-0.55	0.1380	0.0049	0.45
GZMYE9		0.0650	-0.0002	-0.03	0.1390	0.0059	0.54
J2G6GY		0.0680	0.0028	0.36	0.1420	0.0089	0.81
J4WWY2		0.0760	0.0108	1.42	0.1170	-0.0161	-1.46
JQZKVG		0.0620	-0.0032	-0.42	0.1270	-0.0061	-0.55
KZM4Q2		0.0550	-0.0102	-1.34	0.1330	-0.0001	0.00
LFZYCU	X	0.1000	0.0348	4.57	0.1000	-0.0331	-3.01
LKR7TH	*	0.0460	-0.0192	-2.53	0.1220	-0.0111	-1.01
NKMQB2		0.0600	-0.0052	-0.69	0.1400	0.0069	0.63
P48J7A		0.0740	0.0088	1.15	0.1330	-0.0001	0.00
PHT4D4	X	0.5000	0.4348	57.11	0.5000	0.3669	33.39
Q2XUJR		0.0690	0.0038	0.50	0.1260	-0.0071	-0.64
QLP6WX	X	7.220	7.1548	939.85	9.100	8.9669	815.91
R3B8RR		0.0800	0.0148	1.94	0.1320	-0.0011	-0.10
R9XZ4R		0.0710	0.0058	0.76	0.1330	-0.0001	0.00
RDCGV4	M	No Data Reported			0.1090	-0.0241	-2.19
TL3FM2	X	0.2340	0.1688	22.17	0.3030	0.1699	15.46
TXHB32		0.0650	-0.0002	-0.03	0.1310	-0.0021	-0.19
UTVNFZ		0.0654	0.0002	0.02	0.1359	0.0028	0.26
VDYDAE		0.0630	-0.0022	-0.29	0.1390	0.0059	0.54
VFMPB7		0.0550	-0.0102	-1.34	0.1520	0.0189	1.72
VJAC4T		0.0640	-0.0012	-0.16	0.1380	0.0049	0.45
WBRKTL		0.0800	0.0148	1.94	0.1500	0.0169	1.54
WXNWZR		0.0580	-0.0072	-0.95	0.1480	0.0149	1.36
XC2MHQ	X	7.220	7.1548	939.85	10.15	10.0169	911.45
XCJV8L		0.0700	0.0048	0.63	0.1300	-0.0031	-0.28
ZHYZDQ	X	0.1850	0.1198	15.73	0.1840	0.0509	4.64



Summary Statistics

	<u>Sample F05</u>	<u>Sample F06</u>
Grand Means	0.0652	0.1331
Std Dev Btwn Labs	0.0076	0.0110

Samples F05, F06 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 32 of 42 reporting participants

Comments on Assigned Data Flags for Test #1135

- 6GAHZ8 (M) - Participant did not submit data for sample F05.
- 8V4LH3 (X) - Data for sample F06 are high.
- AJ3Z9A (M) - Participant did not submit data for sample F05.
- LFZYCU (X) - Data for sample F05 are high and data for sample F06 are low.
- PHT4D4 (X) - Extreme data.
- QLP6WX (X) - Extreme data.
- RDCGV4 (M) - Participant did not submit data for sample F05.
- TL3FM2 (X) - Data for both samples are high.
- XC2MHQ (X) - Extreme data.
- ZHYZDQ (X) - Data for both samples are high.



Analysis 1135

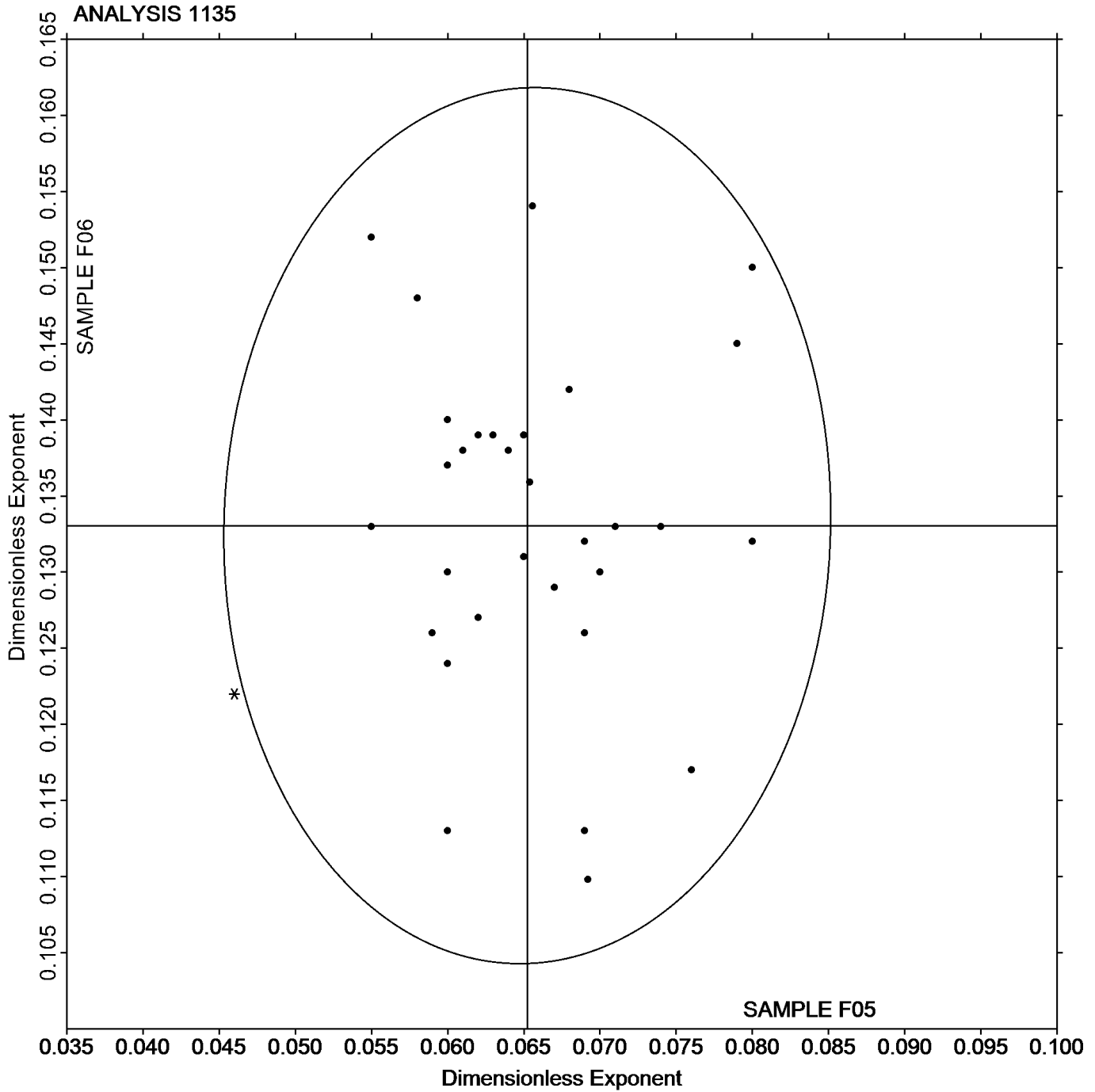
n-Value: Lab-Machined Flat Steel
ASTM E646

SAMPLE F05

SAMPLE F06

0.0652

0.1331





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1201

Fastener Wedge Tensile (10 degree)
ASTM F606

WebCode	Data Flag	Sample X05			Sample X06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
26C7HC		137.76	-0.35	-0.22	137.90	-2.20	-1.19
3T6KZX		139.25	1.14	0.71	142.00	1.89	1.03
3TB6CL		139.58	1.46	0.91	140.49	0.39	0.21
64L6AQ		136.68	-1.43	-0.90	139.54	-0.56	-0.31
7AFEJH		134.43	-3.68	-2.30	135.50	-4.61	-2.49
8AC9GD		136.77	-1.35	-0.84	139.80	-0.31	-0.17
8GX2TD		136.07	-2.05	-1.28	138.60	-1.51	-0.82
8MMJ8P		136.93	-1.18	-0.74	138.50	-1.61	-0.87
8PNMWQ		137.23	-0.88	-0.55	139.53	-0.57	-0.31
8V4H8Z		137.33	-0.78	-0.49	139.67	-0.44	-0.24
8V4MKN		138.90	0.79	0.49	140.37	0.26	0.14
93WE43		137.03	-1.08	-0.67	138.51	-1.59	-0.86
96DC8D		136.90	-1.21	-0.76	138.97	-1.14	-0.62
A8YFEB		138.60	0.48	0.30	141.72	1.61	0.87
BCQ4B9		137.59	-0.53	-0.33	138.53	-1.58	-0.85
BG6K3K		137.33	-0.78	-0.49	140.33	0.23	0.12
CG77J4	*	138.12	0.01	0.01	137.59	-2.52	-1.36
DCYZTH		138.63	0.52	0.33	139.63	-0.47	-0.26
DZGBPT		137.97	-0.14	-0.09	139.23	-0.88	-0.48
E3YU6G		137.16	-0.95	-0.60	138.56	-1.55	-0.84
EK9P7G		136.40	-1.72	-1.07	138.96	-1.15	-0.62
FLXFRL		137.97	-0.15	-0.09	139.80	-0.31	-0.17
FUDJ3Y		138.03	-0.08	-0.05	138.93	-1.17	-0.64
GH6VWN		138.47	0.35	0.22	139.48	-0.63	-0.34
GUNDVZ		137.73	-0.38	-0.24	139.34	-0.77	-0.41
HJN6Q3	X	6,922	6,783.89	4,236.42	6,995	6,855.18	3,710.25
JPRB66		141.40	3.29	2.05	144.23	4.13	2.23
KMVETF		140.35	2.23	1.40	142.35	2.24	1.21
KTC6MW		136.64	-1.48	-0.92	139.13	-0.97	-0.53
KW2WRE		138.54	0.43	0.27	140.86	0.75	0.41
L34M9A		137.33	-0.78	-0.49	138.67	-1.44	-0.78
L48D7Y		136.53	-1.58	-0.99	139.17	-0.94	-0.51
L9384Z		137.53	-0.58	-0.36	140.42	0.31	0.17
LC2H2L		137.80	-0.31	-0.19	140.06	-0.05	-0.03
LQKAJZ		136.59	-1.52	-0.95	139.09	-1.02	-0.55
M9BED2		139.77	1.66	1.03	142.59	2.48	1.34
MHPMAF	X	10.46	-127.65	-79.72	10.59	-129.52	-70.10
MJFTQ7	X	99.31	-38.81	-24.23	104.03	-36.07	-19.52
N4H2FP		138.63	0.52	0.33	139.50	-0.61	-0.33
N6T33N		137.89	-0.22	-0.14	140.88	0.77	0.42
N9HBXW		139.00	0.89	0.55	141.47	1.36	0.74
NR44D7		138.61	0.50	0.31	140.52	0.41	0.22
PG4V89		141.33	3.22	2.01	144.33	4.23	2.29
Q3EDUV		137.23	-0.88	-0.55	139.01	-1.09	-0.59
QT9BT6		138.67	0.55	0.35	139.00	-1.11	-0.60
QUYAGW		137.30	-0.81	-0.51	139.10	-1.01	-0.55
QXXLCW		136.03	-2.08	-1.30	138.63	-1.47	-0.80



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1201

Fastener Wedge Tensile (10 degree)
ASTM F606

WebCode	Data Flag	Sample X05			Sample X06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
REZKX6		138.33	0.22	0.14	140.00	-0.11	-0.06
RH2NPR		137.23	-0.89	-0.55	138.72	-1.39	-0.75
RMGNB4		137.87	-0.25	-0.15	139.87	-0.24	-0.13
T334NU		138.97	0.85	0.53	140.20	0.09	0.05
TBY2BW		137.44	-0.68	-0.42	140.99	0.88	0.48
TDLFZ7		137.40	-0.71	-0.44	141.37	1.26	0.68
TLHDPU		138.57	0.45	0.28	141.20	1.09	0.59
VC46Z6		137.60	-0.51	-0.32	137.83	-2.27	-1.23
WXLZX9		136.47	-1.65	-1.03	138.97	-1.14	-0.62
X8BALA		138.67	0.56	0.35	140.08	-0.02	-0.01
XKBBWP	*	142.47	4.35	2.72	145.07	4.96	2.68
XR8J9X		136.90	-1.21	-0.76	139.90	-0.21	-0.11
YJDZY2	*	143.11	5.00	3.12	145.16	5.05	2.73
YJW2K4		138.20	0.09	0.05	141.60	1.49	0.81
YME93B	*	142.27	4.16	2.60	144.38	4.27	2.31
ZUNMWL		139.20	1.09	0.68	140.60	0.49	0.27

Summary Statistics

	Sample X05		Sample X06	
Grand Means	138.11	ksi	140.11	ksi
Stnd Dev Brwn Labs	1.60	ksi	1.85	ksi

Samples X05, X06 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 60 of 63 reporting participants

Comments on Assigned Data Flags for Test #1201

HJN6Q3 (X) - Extreme data.

MHPMAF (X) - Extreme data.

MJFTQ7 (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1201

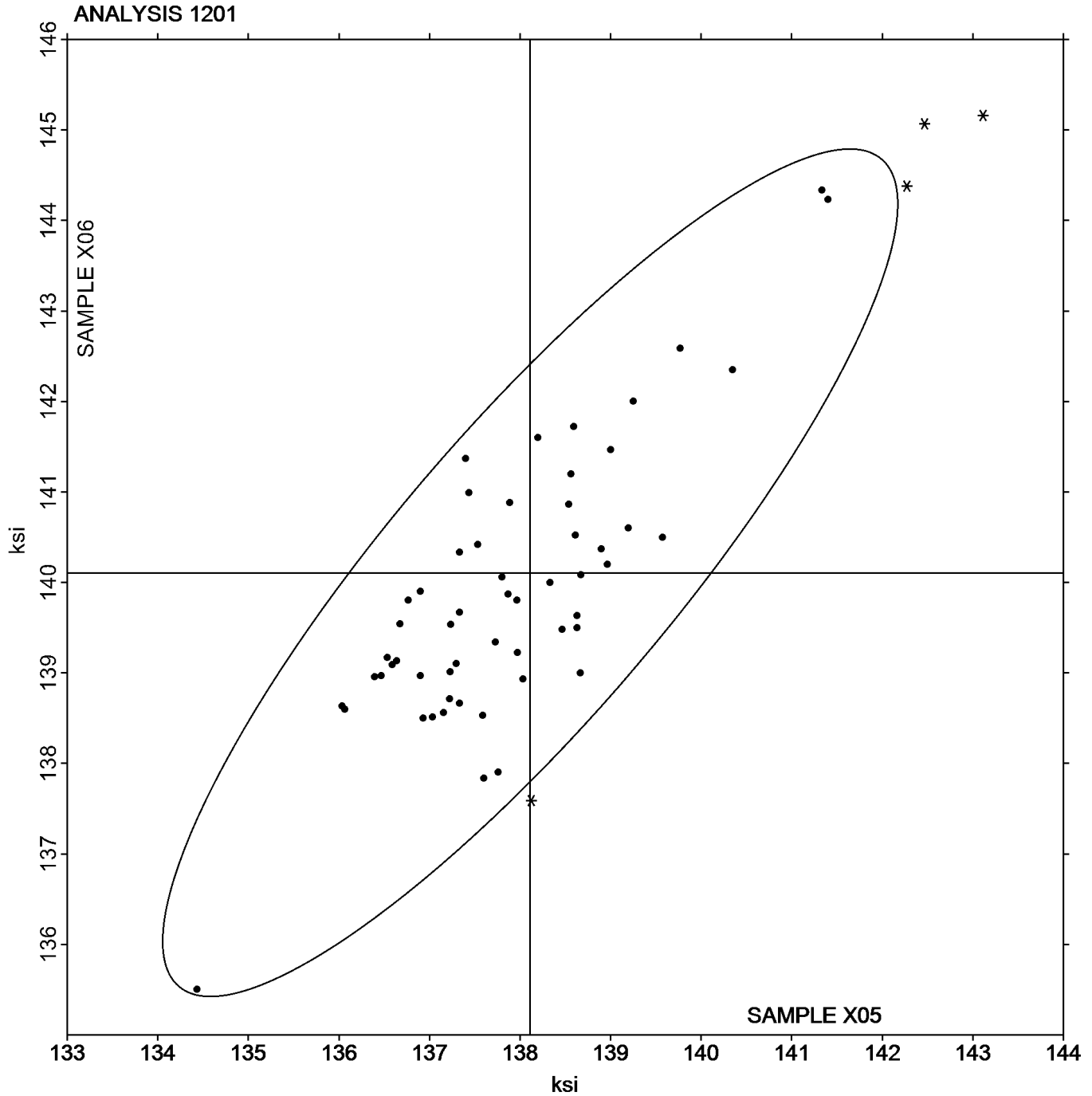
Fastener Wedge Tensile (10 degree)
ASTM F606

SAMPLE X05

SAMPLE X06

138.11 ksi

140.11 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1202

Fastener Axial Tensile
ASTM F606

WebCode	Data Flag	Sample Q05			Sample Q06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
26C7HC		138.51	0.20	0.18	139.39	-0.40	-0.29
3JY6HB	X	141.51	3.21	2.81	147.35	7.56	5.48
4FHxz3		138.36	0.06	0.05	142.34	2.54	1.84
64KLWN		138.17	-0.14	-0.12	140.00	0.21	0.15
64L6AQ		137.88	-0.42	-0.37	137.88	-1.91	-1.39
7AFEJH	*	135.07	-3.24	-2.83	136.10	-3.69	-2.68
7VZDNC		138.67	0.36	0.32	140.33	0.54	0.39
8MMJ8P		137.20	-1.10	-0.96	140.13	0.34	0.25
8PNMWQ	*	136.17	-2.14	-1.87	140.47	0.67	0.49
8V4H8Z		137.67	-0.64	-0.56	141.00	1.21	0.87
93WE43		137.07	-1.23	-1.08	138.40	-1.40	-1.01
96DC8D		137.17	-1.14	-0.99	139.77	-0.03	-0.02
B36BLC		136.54	-1.76	-1.54	138.26	-1.53	-1.11
BCQ4B9		137.80	-0.50	-0.44	136.74	-3.05	-2.21
BG6K3K		138.33	0.03	0.03	140.67	0.87	0.63
CG77J4		138.53	0.22	0.20	137.88	-1.91	-1.39
CVMY8B		138.63	0.33	0.29	138.83	-0.96	-0.70
DB2MZ6	X	11.23	-127.07	-111.08	11.63	-128.16	-92.84
DCYZTH		138.80	0.50	0.43	140.47	0.67	0.49
E3YU6G		137.79	-0.52	-0.45	138.27	-1.52	-1.10
FLXFRL		139.10	0.80	0.70	141.07	1.27	0.92
G9QMZ9		140.16	1.86	1.62	140.94	1.15	0.83
GAZU2G		138.03	-0.27	-0.24	140.13	0.34	0.25
GH6VWN		139.27	0.97	0.85	141.06	1.27	0.92
GUNDVZ		138.68	0.37	0.33	139.44	-0.35	-0.26
J4BKX8		138.35	0.05	0.04	139.20	-0.59	-0.43
JCNGX8		138.61	0.31	0.27	138.56	-1.24	-0.90
JDLH7K		139.32	1.02	0.89	140.41	0.61	0.44
KLZWRE		138.20	-0.10	-0.09	139.07	-0.73	-0.53
KMVETF	*	140.30	2.00	1.75	143.25	3.45	2.50
KTC6MW		136.34	-1.97	-1.72	139.40	-0.40	-0.29
KW2WRE		140.17	1.87	1.63	140.47	0.68	0.49
L34M9A		137.33	-0.97	-0.85	140.00	0.21	0.15
L9384Z		138.44	0.13	0.12	141.94	2.15	1.56
LQKAJZ		136.93	-1.37	-1.20	139.29	-0.50	-0.36
M9BED2		140.27	1.96	1.72	142.27	2.47	1.79
MHPMAF	X	10.51	-127.80	-111.71	10.68	-129.11	-93.53
MJFTQ7	X	101.67	-36.64	-32.02	104.80	-34.99	-25.35
MW8D9H		139.36	1.05	0.92	142.25	2.45	1.78
N9HBXW		139.50	1.20	1.05	142.03	2.24	1.62
NKMRXK	X	142.67	4.36	3.81	144.00	4.21	3.05
NZ2UYG		136.78	-1.52	-1.33	139.09	-0.71	-0.51
P4FQZC		137.46	-0.84	-0.74	139.09	-0.71	-0.51
PG4V89	*	141.33	3.03	2.65	140.67	0.87	0.63
Q276MW		137.80	-0.50	-0.44	140.50	0.71	0.51
QNBLJ7	X	157.85	19.55	17.09	158.97	19.17	13.89
QXXLCW		137.50	-0.80	-0.70	140.40	0.61	0.44



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

Cycle 148
4th Qtr 2024

WebCode	Data Flag	Sample Q05			Sample Q06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
REZKX6		138.00	-0.30	-0.26	139.33	-0.46	-0.33
RH2NPR		137.34	-0.96	-0.84	138.42	-1.37	-0.99
RKQJHW		138.43	0.13	0.11	139.33	-0.46	-0.33
RKUYY4		139.53	1.22	1.07	140.26	0.46	0.34
RMGNB4		138.20	-0.10	-0.09	138.00	-1.79	-1.30
RU62K6	X	10.66	-127.65	-111.58	10.73	-129.06	-93.49
RWRPUJ		138.17	-0.13	-0.11	139.48	-0.32	-0.23
T6FXWL		137.13	-1.17	-1.02	138.09	-1.70	-1.23
TBY2BW		138.32	0.02	0.02	139.57	-0.22	-0.16
TDLFZ7		138.17	-0.14	-0.12	140.73	0.94	0.68
TEK6CL		137.79	-0.52	-0.45	140.54	0.75	0.54
TLHDPU		138.23	-0.07	-0.06	140.60	0.81	0.58
UXDBHR		138.90	0.60	0.52	140.63	0.84	0.61
VC46Z6		139.00	0.70	0.61	139.67	-0.13	-0.09
WVAZ9M		138.59	0.29	0.25	138.90	-0.89	-0.65
WXLZX9		137.37	-0.94	-0.82	137.50	-2.29	-1.66
XR8J9X		138.40	0.10	0.09	140.53	0.74	0.54
XX2YBX		138.81	0.50	0.44	138.65	-1.15	-0.83
YJDZY2	X	144.38	6.08	5.31	145.29	5.50	3.99
YME93B	X	143.92	5.62	4.91	148.22	8.43	6.11
Z3MHKQ		140.58	2.28	1.99	139.85	0.05	0.04
Z9T9PH	X	11.20	-127.10	-111.10	11.43	-128.36	-92.98
ZUNMWL		139.63	1.33	1.16	140.07	0.27	0.20

Summary Statistics				
	Sample Q05		Sample Q06	
Grand Means	138.30	ksi	139.79	ksi
Std Dev Btwn Labs	1.14	ksi	1.38	ksi

Samples Q05, Q06 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 60 of 70 reporting participants

Comments on Assigned Data Flags for Test #1202

- 3JY6HB (X) - Data for both samples are high.
- DB2MZ6 (X) - Extreme data.
- MHPMAF (X) - Extreme data.
- MJFTQ7 (X) - Data for both samples are low.
- NKMRXK (X) - Data for both samples are high.
- QNBLJ7 (X) - Data for both samples are high.
- RU62K6 (X) - Extreme data.
- YJDZY2 (X) - Data for both samples are high.
- YME93B (X) - Data for both samples are high. Inconsistent within the determinations of sample Q06.
- Z9T9PH (X) - Extreme data.



Analysis 1202

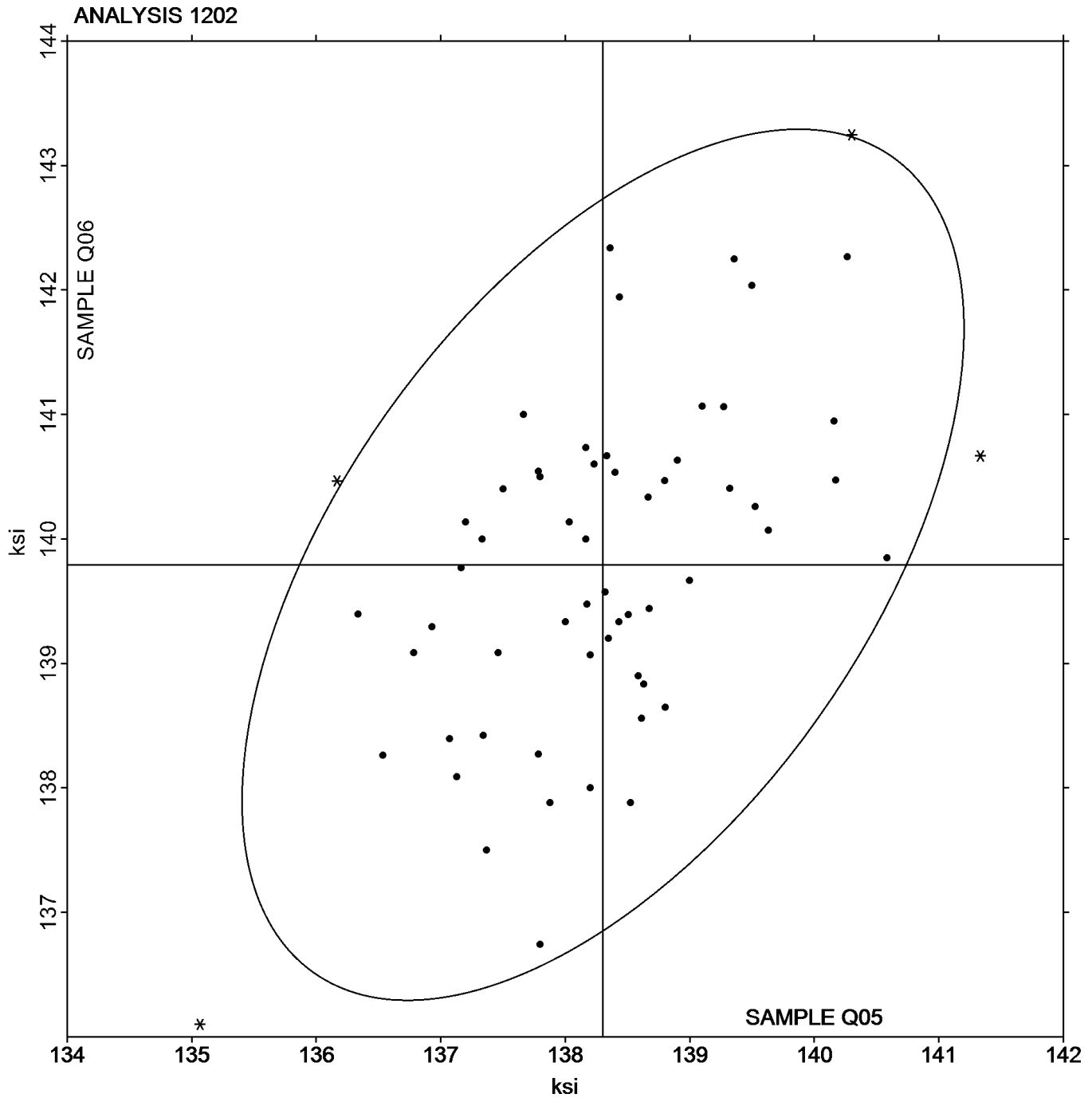
Fastener Axial Tensile
ASTM F606

SAMPLE Q05

SAMPLE Q06

138.30 ksi

139.79 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1203

Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

WebCode	Data Flag	Sample B05			Sample B06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
4KMANG		1,103	-2	-0.23	1,130	-3	-0.36
96DC8D		1,101	-4	-0.46	1,131	-2	-0.20
9AWY8H	X	65,700	64,595	6,859.70	69,800	68,667	8,686.70
9BMA2R	X	64,181	63,076	6,698.36	66,089	64,956	8,217.25
A89JJ9	*	1,106	1	0.13	1,155	22	2.83
BCQ4B9		1,102	-3	-0.31	1,125	-8	-1.02
CG77J4		1,108	3	0.29	1,128	-5	-0.60
CTDM49		1,100	-5	-0.53	1,140	7	0.92
DCLTX8		1,109	4	0.39	1,141	9	1.09
DD3QRR		1,094	-11	-1.16	1,122	-11	-1.36
ELUMQE		1,097	-8	-0.81	1,131	-1	-0.18
HLHZ4G		1,095	-10	-1.09	1,126	-6	-0.81
JFNP43		1,112	7	0.75	1,125	-8	-1.02
LFQXX2		1,109	4	0.46	1,125	-8	-1.02
MDR48G	*	1,134	29	3.08	1,137	4	0.50
N262VA		1,109	4	0.39	1,133	0	-0.01
N33YB2		1,096	-9	-0.92	1,131	-1	-0.18
NM6HVX		1,122	17	1.81	1,146	13	1.63
Q7CAB6		1,099	-6	-0.67	1,125	-8	-1.02
VZNF2Z		1,114	10	1.01	1,143	10	1.26
WXLZX9		1,097	-8	-0.84	1,132	0	-0.05
XR7NQR		1,107	2	0.25	1,134	1	0.12
XTEYHP		1,096	-9	-0.95	1,131	-2	-0.26
YMT4GL		1,101	-4	-0.38	1,133	0	0.03
ZYN2AH		1,103	-2	-0.23	1,131	-2	-0.28

Summary Statistics

	Sample B05		Sample B06	
Grand Means	1,105	MPa	1,133	MPa
Stnd Dev Btrwn Labs	9	MPa	8	MPa

Samples B05, B06 : M-10x1.5x70, M-10x1.5x80

Statistics based on 23 of 25 reporting participants

Comments on Assigned Data Flags for Test #1203

9AWY8H (X) - Extreme data.

9BMA2R (X) - Extreme data.



Analysis 1203

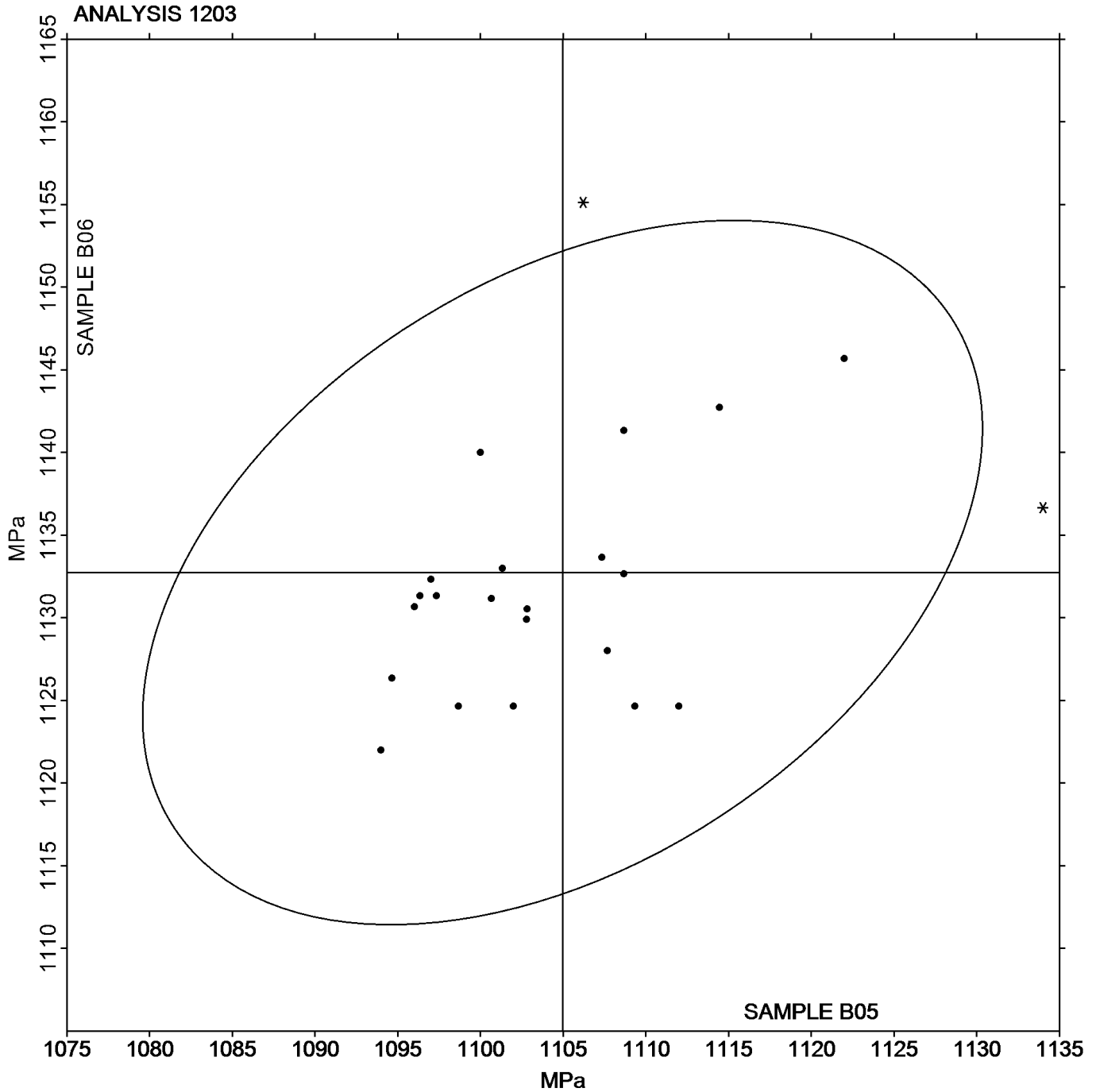
Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

SAMPLE B05

SAMPLE B06

1,105 MPa

1,133 MPa





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1204

Fastener Axial Tensile - Metric
ASTM F606M

WebCode	Data Flag	Sample T05			Sample T06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
4KMANG		1,107	-4	-0.32	1,128	-8	-0.70
6LNXTJ		1,128	17	1.52	1,150	14	1.22
7798BW	*	1,113	2	0.20	1,113	-24	-2.08
BCQ4B9		1,088	-23	-2.04	1,125	-11	-0.97
CG77J4		1,106	-5	-0.49	1,126	-10	-0.88
CTDM49		1,117	6	0.50	1,140	4	0.32
D6LGX4		1,118	7	0.61	1,126	-11	-0.93
E7Y9NZ		1,129	18	1.64	1,149	13	1.14
FFUAE4		1,093	-18	-1.65	1,136	0	-0.03
FLXFRL		1,112	1	0.12	1,134	-2	-0.19
HLG6F6		1,121	10	0.86	1,148	12	1.05
JFNP43		1,101	-10	-0.93	1,127	-9	-0.82
LGLFY3		1,102	-9	-0.79	1,142	6	0.49
N33YB2		1,104	-7	-0.61	1,138	1	0.11
NM6HVX		1,117	6	0.53	1,149	12	1.08
Q7CAB6		1,115	4	0.38	1,138	2	0.17
RMGM9J		1,102	-9	-0.84	1,129	-8	-0.68
VAMBMJ		1,097	-14	-1.27	1,120	-16	-1.44
VZNF2Z		1,130	19	1.66	1,158	21	1.86
WBG7XY		1,116	5	0.42	1,142	6	0.53
WXLZX9		1,107	-4	-0.37	1,128	-8	-0.73
XR7NQR		1,112	1	0.05	1,139	3	0.23
XTEYHP		1,120	9	0.80	1,151	14	1.25

Summary Statistics						
	Sample T05			Sample T06		
Grand Means	1,111	MPa		1,136	MPa	
Stnd Dev Btwn Labs	11	MPa		11	MPa	

Samples T05, T06 : M-10x1.5x70, M-10x1.5x80

Statistics based on 23 of 23 reporting participants



Analysis 1204

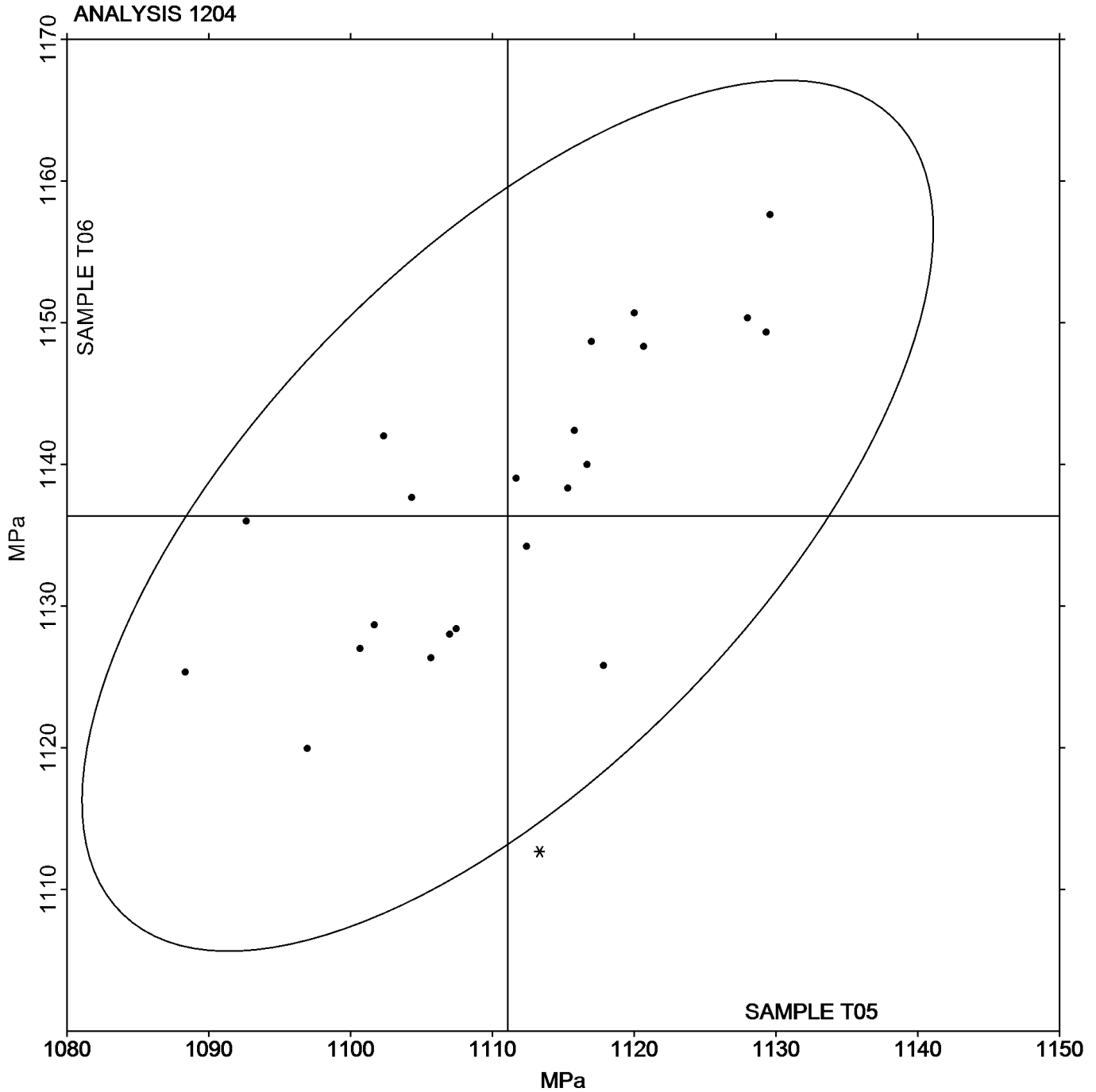
Fastener Axial Tensile - Metric
ASTM F606M

SAMPLE T05

SAMPLE T06

1,111 MPa

1,136 MPa





Fasteners and Metals Interlaboratory Testing Program

Analysis 1210

Cycle 148
4th Qtr 2024

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

WebCode	Data Flag	Sample G05			Sample G06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3M2EMF		36.76	-0.09	-0.13	37.28	0.22	0.39
4DEAEL		37.39	0.55	0.79	36.98	-0.09	-0.16
4KMANG		35.95	-0.90	-1.29	36.51	-0.55	-1.00
64L6AQ		38.06	1.21	1.74	37.20	0.13	0.24
7AFEJH		36.63	-0.22	-0.32	37.14	0.07	0.13
86PQRN		37.71	0.87	1.24	37.49	0.43	0.77
8AC9GD		37.00	0.15	0.22	37.39	0.32	0.58
8V4H8Z		36.89	0.05	0.07	36.94	-0.12	-0.22
8YVL8D		37.40	0.55	0.80	36.44	-0.63	-1.13
93WE43		37.05	0.20	0.29	37.51	0.44	0.79
96DC8D		35.64	-1.21	-1.74	36.83	-0.23	-0.42
9BMA2R		36.34	-0.51	-0.73	36.97	-0.10	-0.18
9M84K7		36.11	-0.73	-1.05	35.84	-1.23	-2.21
BCQ4B9		38.01	1.16	1.67	38.06	1.00	1.79
DB2MZ6	X	34.37	-2.48	-3.56	32.31	-4.76	-8.57
DCLTX8		36.12	-0.73	-1.05	36.84	-0.23	-0.41
DD3QRR		36.31	-0.53	-0.77	36.44	-0.63	-1.13
DFRYV2		35.80	-1.05	-1.50	36.79	-0.28	-0.50
DV23Y8		36.17	-0.68	-0.97	36.56	-0.50	-0.91
DZGBPT		37.19	0.34	0.49	36.06	-1.00	-1.81
E3PQ2J		37.46	0.61	0.88	37.16	0.09	0.16
E3YU6G		37.04	0.19	0.27	37.38	0.31	0.56
FFUAE4		37.39	0.54	0.78	36.96	-0.11	-0.20
FLXFRL		36.50	-0.35	-0.50	37.28	0.22	0.39
G9QMZ9		37.15	0.30	0.44	37.30	0.23	0.42
GUNDVZ		37.89	1.05	1.50	37.96	0.89	1.60
HLHZ4G	X	36.28	-0.57	-0.82	34.37	-2.70	-4.86
JCNGX8		38.01	1.17	1.68	37.07	0.00	0.00
JFT3RY		36.03	-0.82	-1.18	36.03	-1.03	-1.86
JPRB66		36.67	-0.18	-0.26	37.06	0.00	-0.01
KBBZKU		37.14	0.30	0.43	37.16	0.09	0.16
KMVETF		36.29	-0.56	-0.80	36.82	-0.25	-0.45
KUQALU		36.58	-0.27	-0.39	36.24	-0.83	-1.49
KW2WRE		37.68	0.83	1.20	36.81	-0.26	-0.47
L34M9A		36.40	-0.45	-0.64	36.64	-0.42	-0.76
MJFTQ7		36.82	-0.03	-0.04	37.18	0.12	0.21
N262VA		36.03	-0.82	-1.18	37.01	-0.06	-0.11
N2BWQ8		38.24	1.40	2.01	37.24	0.18	0.32
N4H2FP		37.16	0.32	0.45	37.14	0.07	0.13
N6T33N		37.29	0.45	0.64	36.99	-0.08	-0.14
N9HBXW		37.36	0.51	0.74	37.08	0.01	0.02
NLH9C3		36.83	-0.02	-0.03	38.24	1.17	2.11
P4FQZC		37.54	0.70	1.00	37.57	0.50	0.90
QNBLJ7		36.58	-0.26	-0.38	36.96	-0.11	-0.19
QXXLCW		37.50	0.65	0.94	38.00	0.93	1.68
R4NMJ8		37.48	0.63	0.91	37.39	0.33	0.59
RAL67R		36.94	0.09	0.13	37.31	0.25	0.44



**Fasteners and Metals Interlaboratory Testing Program
Analysis 1210**

**Cycle 148
4th Qtr 2024**

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

WebCode	Data Flag	Sample G05			Sample G06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
REZKX6	*	35.08	-1.77	-2.54	36.12	-0.95	-1.71
RH2NPR		37.01	0.17	0.24	37.43	0.36	0.65
RKUYY4		36.48	-0.37	-0.53	36.40	-0.67	-1.20
TBY2BW		36.60	-0.25	-0.35	36.66	-0.41	-0.74
TDLFZ7		37.09	0.24	0.35	37.16	0.10	0.17
TLHDPU		36.42	-0.43	-0.61	37.37	0.30	0.54
UXDBHR		36.38	-0.47	-0.68	37.44	0.37	0.67
VC46Z6		35.89	-0.96	-1.38	36.97	-0.10	-0.18
VZNF2Z		37.04	0.19	0.27	37.80	0.73	1.32
WBG7XY		35.92	-0.93	-1.33	36.89	-0.17	-0.31
WXLZX9		36.13	-0.72	-1.04	36.04	-1.02	-1.84
X9RA9X		37.14	0.29	0.42	36.68	-0.39	-0.70
XKBBWP	*	36.35	-0.50	-0.71	38.06	0.99	1.78
XR8J9X		38.15	1.30	1.87	37.67	0.60	1.08
YGHCYP		37.20	0.35	0.51	37.66	0.59	1.06
YJW2K4		37.38	0.53	0.76	37.50	0.43	0.78
YME93B		36.74	-0.11	-0.16	36.31	-0.76	-1.37
Z3MHKQ		37.10	0.25	0.36	37.83	0.77	1.38
Z9T9PH	*	35.16	-1.68	-2.42	35.94	-1.13	-2.03
ZB9DVK		37.19	0.35	0.50	37.51	0.45	0.80
ZUNMWL		36.94	0.09	0.13	37.73	0.67	1.20

Summary Statistics

	Sample G05		Sample G06	
Grand Means	36.85	HRC	37.07	HRC
Std Dev Btwn Labs	0.70	HRC	0.56	HRC

Samples G05, G06 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 66 of 68 reporting participants

Comments on Assigned Data Flags for Test #1210

DB2MZ6 (X) - Data for both samples are low. Inconsistent within the determinations of sample G06.

HLHZ4G (X) - Data for sample G06 are low.



Analysis 1210

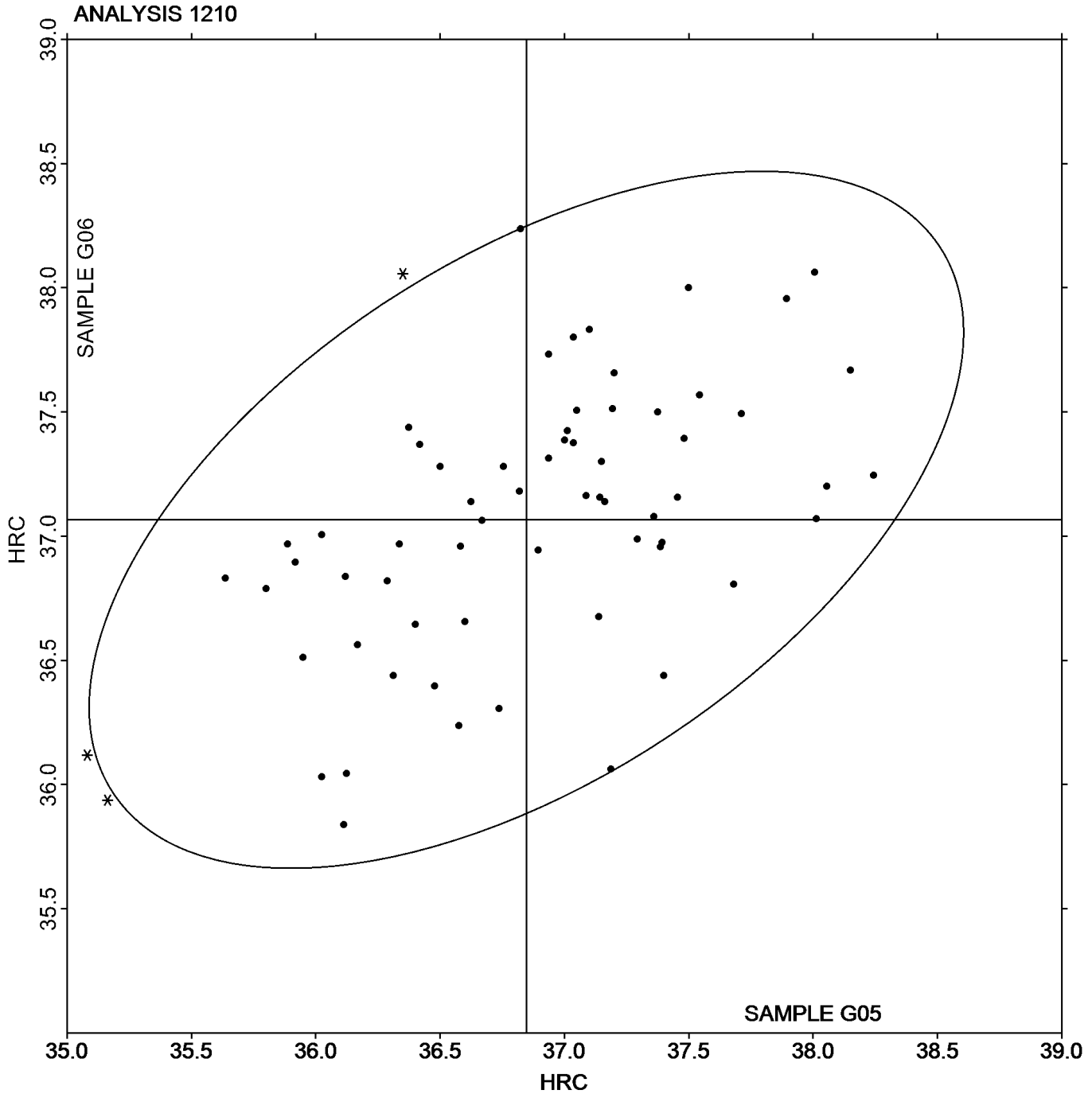
Rockwell Hardness: Externally Threaded Fasteners
ASTM F606/F606M AND ASTM E18

SAMPLE G05

SAMPLE G06

36.85 HRC

37.07 HRC





**Fasteners and Metals Interlaboratory Testing Program
Analysis 1211**

**Cycle 148
4th Qtr 2024**

**Vickers Hardness: Externally Threaded Fasteners
ASTM E92**

WebCode	Data Flag	Sample V05			Sample V06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
4KMANG		371.63	0.17	0.02	366.44	-2.74	-0.28
7LCGKQ		380.81	9.35	1.04	375.00	5.82	0.59
7W9P4T	*	376.31	4.85	0.54	362.19	-6.99	-0.70
8YVL8D		360.11	-11.35	-1.27	352.35	-16.83	-1.70
93WE43		366.13	-5.33	-0.59	364.88	-4.30	-0.43
A89JJ9		365.69	-5.77	-0.64	363.06	-6.11	-0.62
BUB337		371.63	0.17	0.02	368.42	-0.75	-0.08
CG77J4	*	342.56	-28.90	-3.22	338.69	-30.49	-3.07
CTDM49		356.56	-14.90	-1.66	355.06	-14.11	-1.42
D6LGX4		374.23	2.77	0.31	375.48	6.30	0.63
EAXJKZ		369.25	-2.21	-0.25	368.94	-0.24	-0.02
ELUMQE		371.06	-0.40	-0.04	373.38	4.20	0.42
FNC873		370.45	-1.01	-0.11	361.83	-7.34	-0.74
FTWZUG		375.50	4.04	0.45	376.38	7.20	0.73
G9QMZ9		367.56	-3.90	-0.43	369.38	0.20	0.02
GUNDVZ		382.93	11.47	1.28	377.58	8.40	0.85
GUWP4B		366.50	-4.96	-0.55	362.00	-7.18	-0.72
HVM8K3		372.60	1.14	0.13	366.95	-2.23	-0.22
JCNGX8		376.18	4.72	0.53	378.01	8.84	0.89
JFNP43		385.29	13.83	1.54	384.49	15.31	1.54
L34M9A		378.13	6.67	0.74	377.56	8.39	0.84
N33YB2		366.50	-4.96	-0.55	370.38	1.20	0.12
NDWQQ9		388.81	17.35	1.94	385.63	16.45	1.66
P4FQZC		376.61	5.15	0.57	383.76	14.59	1.47
REZKX6		374.81	3.35	0.37	374.38	5.20	0.52
RH2NPR		366.32	-5.14	-0.57	364.22	-4.96	-0.50
VAMBMJ		363.54	-7.92	-0.88	365.91	-3.26	-0.33
XAMTAY		378.50	7.04	0.79	377.31	8.14	0.82
YMT4GL		373.75	2.29	0.26	365.69	-3.49	-0.35
YT6EZL		373.82	2.36	0.26	369.97	0.79	0.08

Summary Statistics				
	Sample V05		Sample V06	
Grand Means	371.46	HV	369.18	HV
Std Dev Btwn Labs	8.97	HV	9.93	HV

Samples V05, V06 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/2

Statistics based on 30 of 30 reporting participants



Analysis 1211

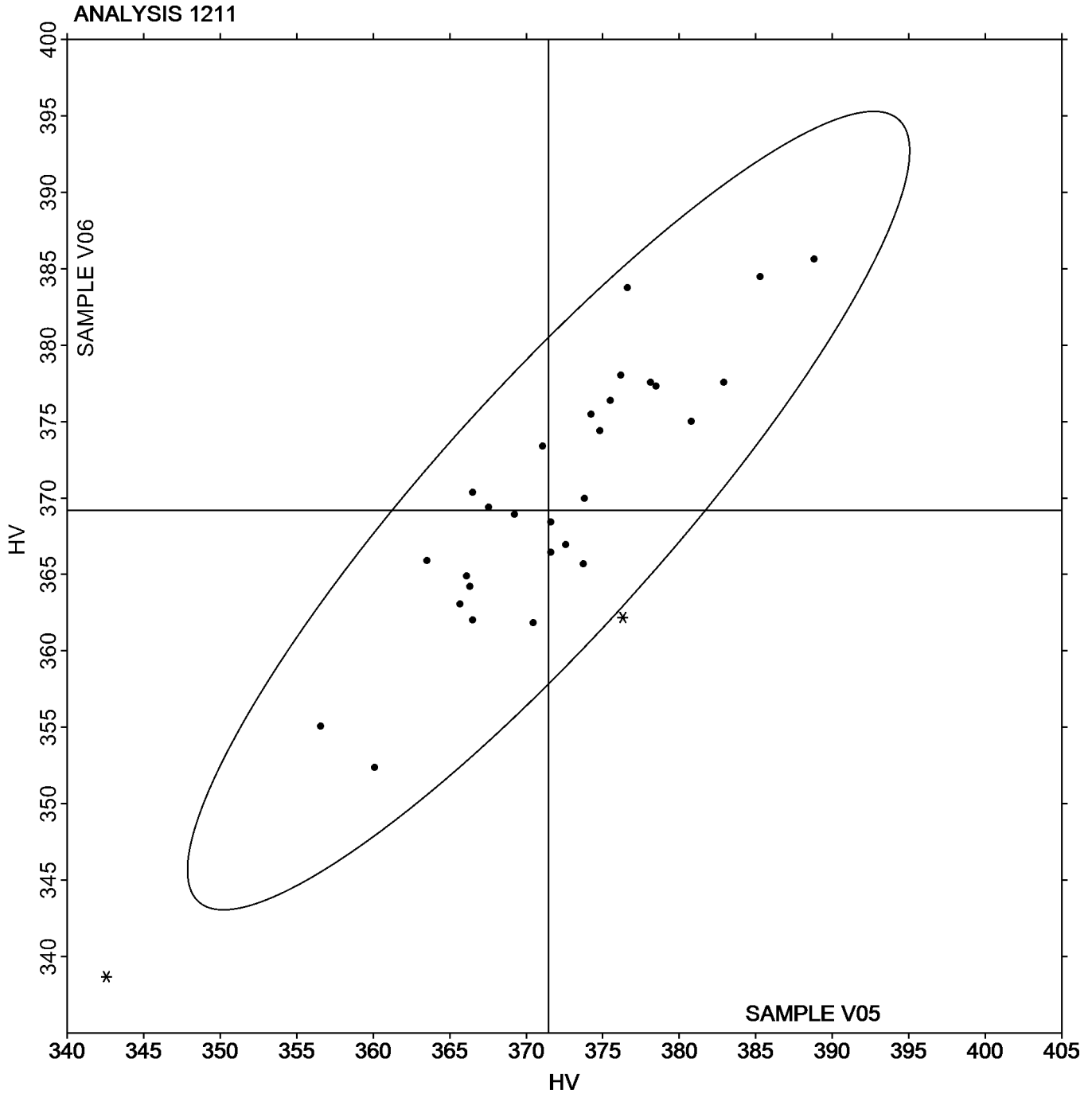
Vickers Hardness: Externally Threaded Fasteners
ASTM E92

SAMPLE V05

SAMPLE V06

371.46 HV

369.18 HV





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1220

Fastener Double Shear
NASM 1312-13

WebCode	Data Flag	Sample Z05			Sample Z06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
4DEAEL		18,561	-5	-0.01	16,322	-112	-0.21
DB2MZ6		19,216	649	1.32	17,129	695	1.29
GMZPR4		18,982	416	0.84	16,661	227	0.42
L34M9A		18,028	-538	-1.09	16,013	-421	-0.78
MJFTQ7		18,841	275	0.56	16,595	161	0.30
N262VA		18,973	407	0.83	17,003	569	1.05
N9HBXW		18,389	-178	-0.36	16,357	-77	-0.14
NR44D7		18,483	-83	-0.17	16,491	57	0.11
REZKX6		18,097	-469	-0.95	16,064	-370	-0.69
RKUYY4		19,420	854	1.73	17,153	719	1.33
T334NU		17,667	-900	-1.83	15,800	-634	-1.17
TBY2BW		18,458	-108	-0.22	16,512	78	0.14
UXDBHR	*	17,866	-701	-1.42	15,008	-1,426	-2.64
YJDZY2		18,533	-33	-0.07	16,397	-37	-0.07
Z3MHKQ		18,270	-296	-0.60	16,324	-110	-0.20
Z9T9PH		19,159	593	1.20	17,119	685	1.27
ZUNMWL		18,685	118	0.24	16,432	-2	0.00

Summary Statistics

	Sample Z05		Sample Z06	
Grand Means	18,566	1b	16,434	1b
Stnd Dev Btrwn Labs	492	1b	540	1b

Samples Z05, Z06 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 17 of 17 reporting participants



Analysis 1220

Fastener Double Shear

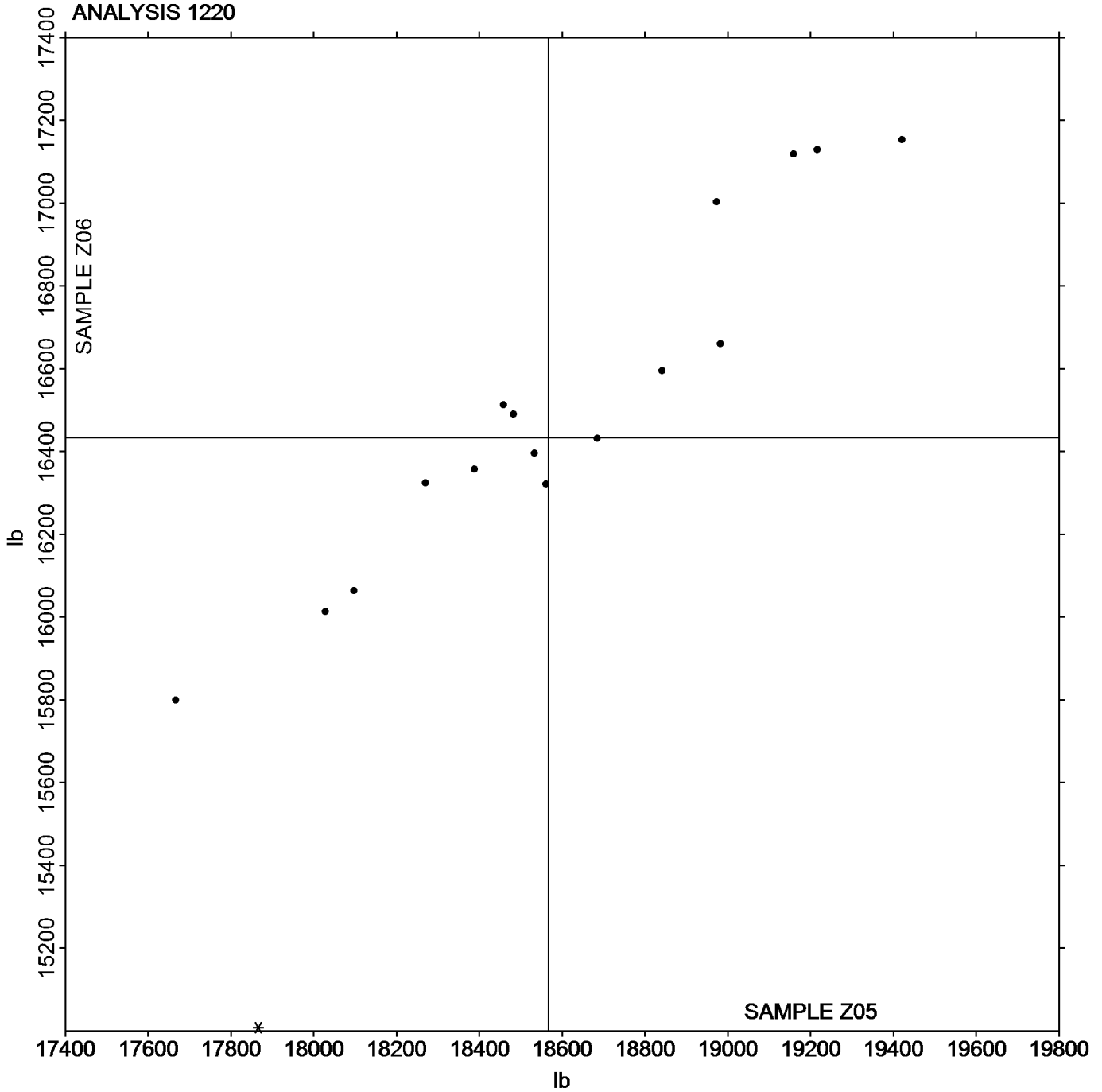
NASM 1312-13

SAMPLE Z05

SAMPLE Z06

18,566 lb

16,434 lb





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1303

Rockwell Hardness: C Scale
ASTM E18

WebCode	Data Flag	Sample E05			Sample E06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2J7VCN	X	55.26	-0.07	-0.14	59.30	-0.80	-1.59
2KCTEX		55.82	0.49	1.05	60.34	0.24	0.48
2XAYWH		55.96	0.63	1.34	60.61	0.52	1.03
38Q68Q		55.33	0.01	0.02	59.87	-0.22	-0.45
3HL7WV		55.16	-0.17	-0.35	60.04	-0.06	-0.11
47XK4R		56.02	0.69	1.47	60.90	0.80	1.60
6EJEAK		55.88	0.55	1.17	60.88	0.78	1.56
6HU3GP		55.36	0.03	0.07	60.04	-0.06	-0.11
6P2XPB		55.80	0.47	1.00	61.00	0.90	1.80
6RB2H2		55.56	0.23	0.50	60.50	0.40	0.80
7798BW		55.72	0.39	0.84	60.50	0.40	0.80
7J6YNF		55.92	0.59	1.26	60.80	0.70	1.40
7UC9FK		55.80	0.47	1.00	60.58	0.48	0.96
7ZH3AF	X	56.24	0.91	1.94	60.36	0.26	0.52
86PTE8		55.75	0.43	0.91	60.38	0.28	0.57
8PE64R		54.86	-0.47	-0.99	59.96	-0.14	-0.27
8RMEZV		55.42	0.09	0.20	60.26	0.16	0.32
92PWBX		55.92	0.59	1.26	60.56	0.46	0.92
9AWY8H		55.46	0.13	0.28	60.24	0.14	0.28
9G2DFE		54.92	-0.41	-0.86	59.68	-0.42	-0.83
9M84K7		55.52	0.19	0.41	60.36	0.26	0.52
9REVPW	*	56.36	1.03	2.19	60.82	0.72	1.44
A2HA9A		55.20	-0.13	-0.27	59.98	-0.12	-0.23
B79Y8T		55.84	0.51	1.09	60.80	0.70	1.40
BCQ4B9		55.70	0.37	0.79	60.60	0.50	1.00
BG6K3K		56.00	0.67	1.43	61.00	0.90	1.80
BRLA2Q		54.74	-0.59	-1.24	59.70	-0.40	-0.79
BYB9LH		55.88	0.55	1.17	60.36	0.26	0.52
CBW737		55.08	-0.25	-0.52	59.94	-0.16	-0.31
CP249R		55.52	0.19	0.41	60.08	-0.02	-0.04
D86YR4		55.00	-0.33	-0.69	60.04	-0.06	-0.11
DDGCZ9		54.48	-0.85	-1.79	59.56	-0.54	-1.07
DECYCC		55.00	-0.33	-0.69	60.00	-0.10	-0.19
DURRPJ		54.64	-0.69	-1.46	59.66	-0.44	-0.87
DZ7EP9		55.52	0.19	0.41	60.42	0.32	0.64
DZU6ZM		55.42	0.09	0.20	60.04	-0.06	-0.11
E486XD		55.41	0.09	0.19	60.05	-0.05	-0.09
EAXJKZ		55.40	0.07	0.16	60.35	0.25	0.50
EM232Q	*	56.44	1.11	2.36	60.94	0.84	1.68
ERHAJY		55.20	-0.13	-0.27	59.76	-0.34	-0.67
ETNTJF		55.80	0.47	1.00	60.60	0.50	1.00
F224C8		54.98	-0.35	-0.73	59.64	-0.46	-0.91
F2EB8H		55.18	-0.15	-0.31	60.12	0.02	0.04
FX2TG8		54.68	-0.65	-1.37	59.24	-0.86	-1.71
G2D36V		56.20	0.87	1.85	60.92	0.82	1.64
G6AJT4		55.32	-0.01	-0.01	60.34	0.24	0.48
GL69DL		55.28	-0.05	-0.10	59.88	-0.22	-0.43



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1303

Rockwell Hardness: C Scale
ASTM E18

WebCode	Data Flag	Sample E05			Sample E06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
GUNDVZ		54.84	-0.49	-1.03	59.80	-0.30	-0.59
H4HCAX	X	53.66	-1.66	-3.53	59.36	-0.73	-1.47
HJ8HKC	*	54.32	-1.01	-2.13	58.76	-1.34	-2.67
KABW3X		54.98	-0.35	-0.73	59.58	-0.52	-1.03
KH7684		55.00	-0.33	-0.69	60.00	-0.10	-0.19
KZRQUE		55.74	0.41	0.88	60.20	0.10	0.20
LC2H2L		55.64	0.31	0.67	60.44	0.34	0.68
LKWMQF		55.56	0.23	0.50	60.73	0.63	1.26
LLNL8Z		55.46	0.13	0.28	60.36	0.26	0.52
M2CE67	*	54.68	-0.65	-1.37	58.98	-1.12	-2.23
MQATC8		54.90	-0.43	-0.90	59.70	-0.40	-0.79
N2Q32Q		55.10	-0.23	-0.48	59.50	-0.60	-1.19
NA8JUJ	X	54.12	-1.21	-2.56	59.80	-0.30	-0.59
NLDU2M		55.50	0.17	0.37	60.30	0.20	0.41
P6339C		55.72	0.39	0.84	60.44	0.34	0.68
PEY63E		55.56	0.23	0.50	60.41	0.31	0.62
PG4V89	X	54.64	-0.69	-1.46	60.15	0.05	0.11
QAXJQ3		54.95	-0.38	-0.81	59.54	-0.55	-1.11
QUMZRB		55.36	0.03	0.07	60.12	0.02	0.04
QUYAGW		54.84	-0.49	-1.03	59.80	-0.30	-0.59
QXXLCW		54.46	-0.87	-1.84	59.08	-1.02	-2.03
RMGM9J		55.44	0.11	0.24	59.70	-0.40	-0.79
RMGNB4		55.26	-0.07	-0.14	60.20	0.10	0.20
TDLFZ7		54.94	-0.39	-0.82	59.62	-0.48	-0.95
TL3HBK		55.48	0.15	0.33	59.94	-0.16	-0.31
TZJDNV		55.47	0.14	0.30	60.21	0.11	0.22
UUEU6X		55.58	0.25	0.54	60.38	0.28	0.56
V94JDY	*	54.16	-1.17	-2.47	58.74	-1.36	-2.71
VHDT2R		54.46	-0.87	-1.84	59.48	-0.62	-1.23
VLTLWQ		54.98	-0.35	-0.73	60.00	-0.10	-0.19
VVFMAF		55.00	-0.33	-0.69	59.54	-0.56	-1.11
VWWEN7		54.88	-0.45	-0.95	59.80	-0.30	-0.59
WAH7R8		54.42	-0.91	-1.92	59.34	-0.76	-1.51
WFM7NV		55.20	-0.13	-0.27	60.02	-0.08	-0.15
WRZEKV		55.62	0.29	0.62	60.30	0.20	0.40
X8BALA		55.30	-0.03	-0.06	60.12	0.02	0.04
XGDRUQ		55.22	-0.11	-0.23	60.18	0.08	0.16
XKBBWP		55.76	0.43	0.92	60.80	0.70	1.40
XR8J9X		55.50	0.17	0.37	60.52	0.42	0.84
XRTNVN		55.56	0.23	0.50	60.36	0.26	0.52
XXCHH3		55.06	-0.27	-0.56	59.68	-0.42	-0.83
YCWR9J		55.36	0.03	0.07	60.22	0.12	0.24
YDJ2TY		55.30	-0.03	-0.06	59.66	-0.44	-0.87
YJDZY2		56.04	0.71	1.51	60.48	0.38	0.76
Z9A83F		55.14	-0.19	-0.39	60.04	-0.06	-0.11
ZPR26J		55.34	0.01	0.03	60.10	0.00	0.00
ZREFTT		54.50	-0.83	-1.75	59.16	-0.94	-1.87



Summary Statistics

	<u>Sample E05</u>		<u>Sample E06</u>	
Grand Means	55.33	HRC	60.10	HRC
Stnd Dev Btwn Labs	0.47	HRC	0.50	HRC

Samples E05, E06 : Steel, Steel

Statistics based on 89 of 94 reporting participants

Comments on Assigned Data Flags for Test #1303

2J7VCN (X) - Inconsistent in testing between samples.

7ZH3AF (X) - Inconsistent in testing between samples.

H4HCAX (X) - Data for sample E05 are low.

NA8JUZ (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample E05.

PG4V89 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample E05.



Analysis 1303

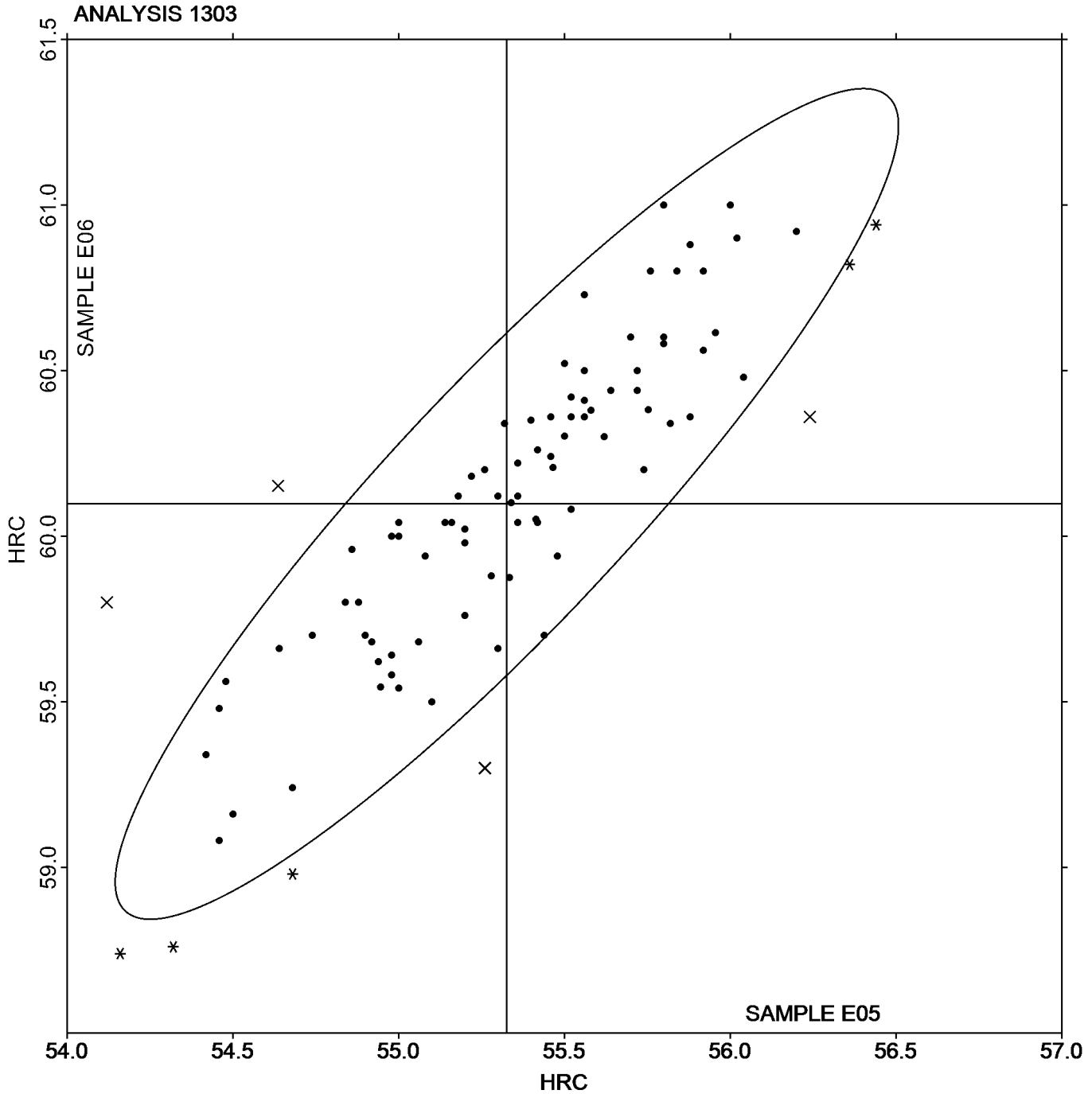
Rockwell Hardness: C Scale
ASTM E18

SAMPLE E05

SAMPLE E06

55.33 HRC

60.10 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

WebCode	Data Flag	Sample E05			Sample E06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2BFA7P		612.60	-12.29	-0.76	715.80	-15.28	-0.75
2UTU3T		612.60	-12.29	-0.76	722.60	-8.48	-0.41
4ABC7D		645.20	20.31	1.26	765.00	33.92	1.66
4UG4RC		614.20	-10.69	-0.66	714.60	-16.48	-0.81
4VUE4X		645.80	20.91	1.30	753.60	22.52	1.10
6PN3MR		608.80	-16.09	-1.00	712.60	-18.48	-0.90
72AY2V		632.66	7.77	0.48	750.84	19.76	0.97
7HQXFL		617.38	-7.51	-0.47	723.18	-7.90	-0.39
7RL32E		629.80	4.91	0.30	726.00	-5.08	-0.25
8H974G		616.80	-8.09	-0.50	724.38	-6.70	-0.33
8QBKHA		625.20	0.31	0.02	734.60	3.52	0.17
AXHYDB		650.59	25.70	1.59	754.05	22.98	1.12
B6BQYA		620.80	-4.09	-0.25	719.20	-11.88	-0.58
BAP7QL		634.36	9.47	0.59	734.06	2.98	0.15
BAQ7N2		619.02	-5.87	-0.36	725.38	-5.70	-0.28
CG77J4		599.20	-25.69	-1.59	704.80	-26.28	-1.29
CVM2XF	X	610.80	-14.09	-0.87	740.60	9.52	0.47
D86YR4		621.40	-3.49	-0.22	729.20	-1.88	-0.09
D8ZJ8X		615.20	-9.69	-0.60	715.60	-15.48	-0.76
G6AJT4		607.40	-17.49	-1.08	707.40	-23.68	-1.16
GAZU2G	*	669.60	44.71	2.77	783.20	52.12	2.55
GUNDVZ	*	629.24	4.35	0.27	754.88	23.80	1.16
H9T42J		651.20	26.31	1.63	764.80	33.72	1.65
HJ8HKC		618.20	-6.69	-0.41	730.40	-0.68	-0.03
J4BKX8		628.20	3.31	0.21	734.20	3.12	0.15
KM7DH6		615.40	-9.49	-0.59	728.40	-2.68	-0.13
M2CE67		598.72	-26.17	-1.62	690.22	-40.86	-2.00
MY9K82	X	602.00	-22.89	-1.42	752.60	21.52	1.05
NKZVHT		626.76	1.87	0.12	728.08	-3.00	-0.15
NM9C3N		606.75	-18.14	-1.12	702.09	-28.99	-1.42
QLRYBW		632.58	7.69	0.48	742.06	10.98	0.54
TDLFZ7		629.20	4.31	0.27	742.60	11.52	0.56
TZJDNV		600.00	-24.89	-1.54	701.60	-29.48	-1.44
X9ZJPJ		636.00	11.11	0.69	735.60	4.52	0.22
XTEYHP		626.54	1.65	0.10	731.90	0.82	0.04
YDJ2TY		625.40	0.51	0.03	726.20	-4.88	-0.24
Z9EN2E	X	634.16	9.27	0.57	773.60	42.52	2.08
ZQBEVM		648.40	23.51	1.46	758.60	27.52	1.35

Summary Statistics

	Sample E05		Sample E06	
Grand Means	624.89	HV 10	731.08	HV 10
Std Dev Btwn Labs	16.14	HV 10	20.43	HV 10

Samples E05, E06 : Steel, Steel

Statistics based on 35 of 38 reporting participants



Comments on Assigned Data Flags for Test #1311

CVM2XF (X) - Inconsistent in testing between samples.

MY9K82 (X) - Inconsistent in testing between samples.

Z9EN2E (X) - Inconsistent in testing between samples.

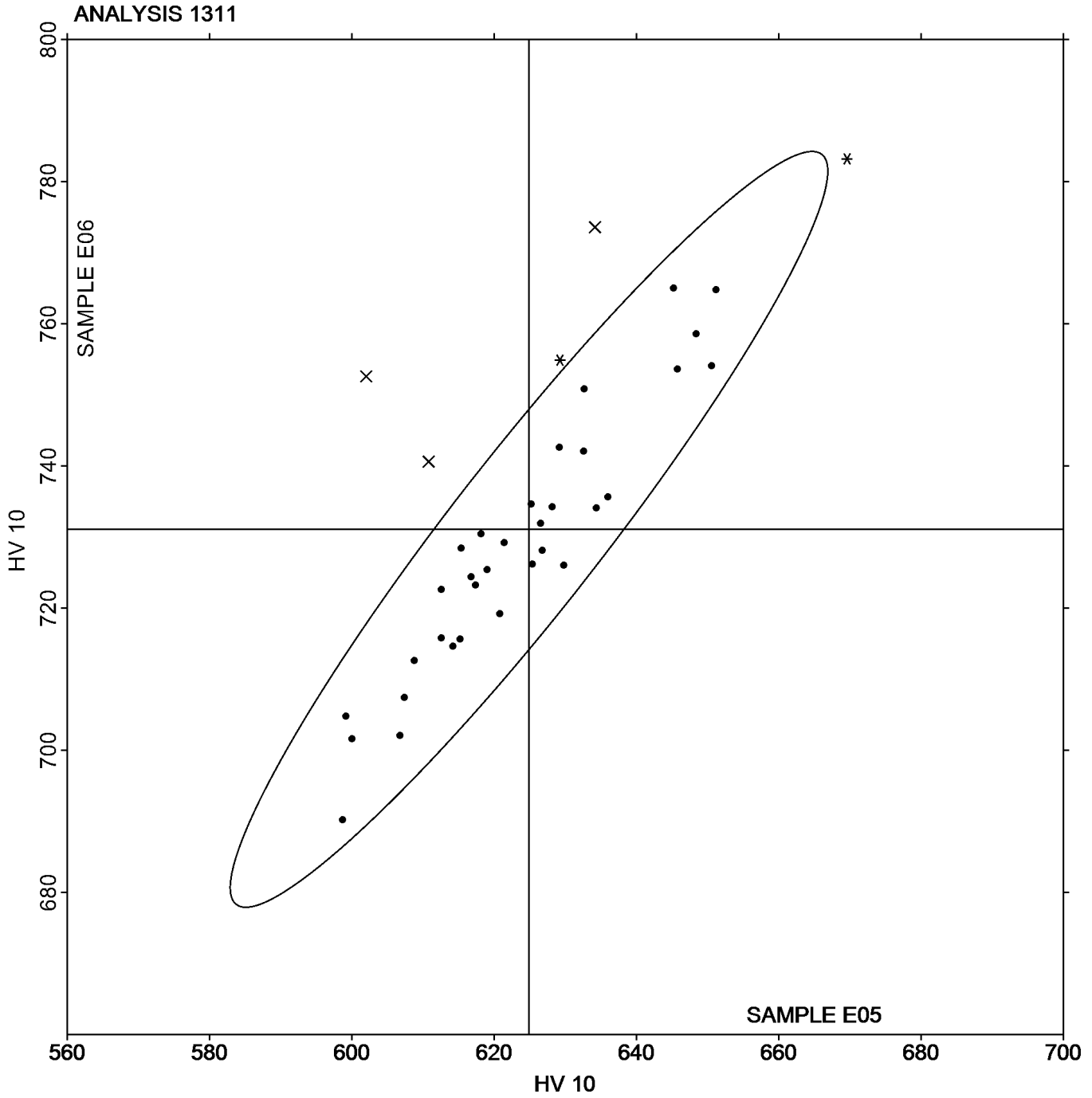


Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

SAMPLE E05
624.89 HV 10

SAMPLE E06
731.08 HV 10





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1351

Rockwell Superficial Hardness (30N Scale)
ASTM E18

WebCode	Data Flag	Sample E05			Sample E06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2BFA7P		74.20	0.86	1.43	78.00	0.60	0.89
2TTWPC		73.38	0.04	0.07	77.32	-0.08	-0.13
2XAYWH		74.32	0.98	1.63	77.49	0.09	0.14
3HL7WV		73.87	0.53	0.88	77.67	0.27	0.41
4FHxz3		73.96	0.62	1.04	77.64	0.24	0.35
4UG4RC		72.24	-1.10	-1.82	76.12	-1.28	-1.92
64L6AQ		73.06	-0.28	-0.46	77.26	-0.14	-0.22
6GXKFN		73.46	0.12	0.21	77.84	0.44	0.65
6W2BRZ		72.68	-0.66	-1.09	77.44	0.04	0.05
72AY2V		73.58	0.24	0.41	77.48	0.08	0.11
7AFEJH		73.80	0.46	0.77	77.00	-0.40	-0.60
7DJ4MC		73.62	0.28	0.47	76.68	-0.72	-1.08
7LCGKQ		72.40	-0.94	-1.55	77.53	0.13	0.19
7UC9FK		73.32	-0.02	-0.03	77.42	0.02	0.02
8JPMPF		73.08	-0.26	-0.43	77.07	-0.33	-0.49
8V4MKN		73.48	0.14	0.24	77.68	0.28	0.41
92PWBX		74.02	0.68	1.14	77.54	0.14	0.20
93WE6M		73.08	-0.26	-0.42	76.88	-0.52	-0.78
9BMA2R		73.40	0.06	0.11	76.62	-0.78	-1.17
9M84K7		74.26	0.92	1.53	78.44	1.04	1.55
AE6G7B		72.54	-0.80	-1.32	76.34	-1.06	-1.59
AMMYC		74.00	0.66	1.10	78.50	1.10	1.64
BCQ4B9	X	75.16	1.82	3.03	77.96	0.56	0.83
BMY4K		72.82	-0.52	-0.86	77.83	0.43	0.64
CG77J4	*	73.64	0.31	0.51	76.41	-1.00	-1.50
CPHHEG		74.06	0.72	1.20	78.78	1.38	2.06
D8ZJ8X		73.41	0.07	0.12	77.62	0.22	0.32
DCLTX8		73.04	-0.30	-0.49	77.40	0.00	-0.01
DD3QRR		73.68	0.34	0.57	77.72	0.32	0.47
EKF44W		74.30	0.96	1.60	77.90	0.50	0.74
FTWZUG		73.30	-0.04	-0.06	77.83	0.43	0.64
GR9BF2		73.82	0.48	0.80	77.68	0.28	0.41
J4BKX8		73.66	0.32	0.54	77.58	0.18	0.26
JV3R6Z		73.38	0.04	0.07	77.66	0.26	0.38
K2N2R3		72.94	-0.40	-0.66	77.34	-0.06	-0.10
KM7DH6		73.50	0.16	0.27	77.78	0.38	0.56
L34M9A		72.80	-0.54	-0.89	77.13	-0.27	-0.40
L6VNCD	*	72.86	-0.48	-0.79	75.84	-1.56	-2.34
LGLFY3		72.40	-0.94	-1.55	76.28	-1.12	-1.68
LYDLWG		73.42	0.08	0.14	76.64	-0.76	-1.14
M2CE67		72.44	-0.90	-1.49	76.98	-0.42	-0.63
N262VA		73.54	0.20	0.34	77.78	0.38	0.56
NDWQQ9		73.80	0.46	0.77	77.63	0.23	0.34
NLH9C3		72.78	-0.56	-0.92	77.44	0.04	0.05
P28JWJ		73.12	-0.22	-0.36	76.76	-0.64	-0.96
P8ULJF		72.96	-0.38	-0.62	76.92	-0.48	-0.72
PEY63E		73.47	0.13	0.22	76.84	-0.56	-0.84



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1351

Rockwell Superficial Hardness (30N Scale)
ASTM E18

WebCode	Data Flag	Sample E05			Sample E06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
Q3EDUV		74.50	1.17	1.94	78.63	1.22	1.84
Q7CAB6		73.28	-0.06	-0.09	77.36	-0.04	-0.07
QUYAGW		72.52	-0.82	-1.35	76.50	-0.90	-1.35
REZKX6		73.37	0.03	0.05	77.67	0.26	0.39
RMGM9J		72.56	-0.78	-1.29	76.46	-0.94	-1.41
RMGNB4		73.48	0.14	0.24	77.84	0.44	0.65
RU62K6		73.86	0.52	0.87	78.10	0.70	1.04
RWRPUJ		72.54	-0.80	-1.32	76.44	-0.96	-1.44
T6FXWL		74.36	1.02	1.70	78.12	0.72	1.07
TDLFZ7	X	70.96	-2.38	-3.94	74.28	-3.12	-4.68
TLHDPJ		72.00	-1.34	-2.22	76.00	-1.40	-2.10
TZJDNV		73.15	-0.19	-0.31	77.33	-0.07	-0.11
V7HV3Y		74.10	0.76	1.27	77.82	0.42	0.62
WB9AHT		74.74	1.40	2.33	78.56	1.16	1.73
WFM7NV		72.50	-0.84	-1.39	77.70	0.30	0.44
WRZEKV		72.78	-0.56	-0.92	76.58	-0.82	-1.23
WXLZX9		73.76	0.42	0.70	77.94	0.54	0.80
XAMTAY		73.33	0.00	0.00	77.47	0.06	0.09
XN7DUR		73.88	0.54	0.90	77.80	0.40	0.59
XTEYHP		72.70	-0.64	-1.05	76.96	-0.44	-0.66
XZ92EG		72.86	-0.48	-0.79	77.84	0.44	0.65
Y4DUFK		73.94	0.60	1.00	78.66	1.26	1.88
YAR24P		72.80	-0.54	-0.89	77.86	0.46	0.68
YGHCPY		73.26	-0.08	-0.13	77.44	0.04	0.05
YY33NY		72.58	-0.76	-1.25	76.26	-1.14	-1.71
ZB9DVK		73.20	-0.14	-0.23	78.20	0.80	1.19
ZUNMWL		73.24	-0.10	-0.16	77.76	0.36	0.53

Summary Statistics

	Sample E05		Sample E06	
Grand Means	73.34	HR30N	77.40	HR30N
Std Dev Btwn Labs	0.60	HR30N	0.67	HR30N

Samples E05, E06 : Steel, Steel

Statistics based on 72 of 74 reporting participants

Comments on Assigned Data Flags for Test #1351

BCQ4B9 (X) - Data for sample E05 are high. Inconsistent within the determinations of sample E06.

TDLFZ7 (X) - Data for both samples are low. Inconsistent within the determinations of sample E06.



Fasteners and Metals Interlaboratory Testing Program

Cycle 148

Analysis 1351

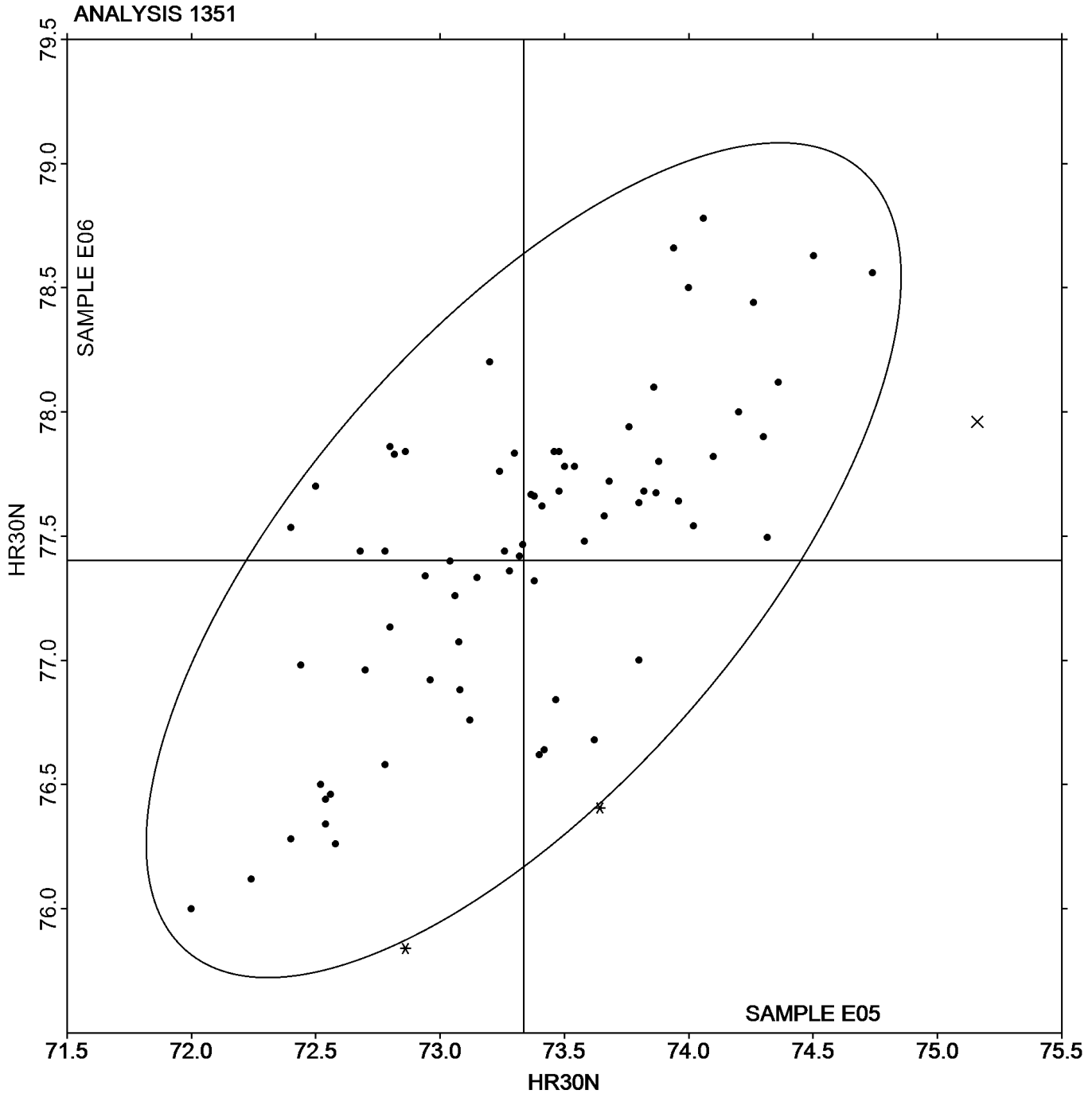
4th Qtr 2024

Rockwell Superficial Hardness (30N Scale)

ASTM E18

SAMPLE E05
73.34 HR30N

SAMPLE E06
77.40 HR30N





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1401

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C05			Sample C06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
37Z2DJ		0.0319	0.0012	0.24	0.0294	0.0027	0.61
4DEAEL		0.0269	-0.0038	-0.80	0.0225	-0.0042	-0.93
4KMANG		0.0325	0.0018	0.37	0.0301	0.0034	0.77
4UG4RC		0.0270	-0.0037	-0.78	0.0238	-0.0028	-0.63
4VQPAF		0.0318	0.0011	0.23	0.0276	0.0009	0.21
7UC9FK	*	0.0377	0.0070	1.47	0.0375	0.0109	2.43
896VXQ		0.0324	0.0017	0.35	0.0270	0.0004	0.08
8GX2TD		0.0289	-0.0018	-0.38	0.0255	-0.0011	-0.25
8RMEZV		0.0323	0.0016	0.33	0.0266	-0.0001	-0.02
8YVL8D		0.0286	-0.0021	-0.45	0.0250	-0.0017	-0.37
96DC8D		0.0307	-0.0001	-0.01	0.0269	0.0003	0.06
9BMA2R		0.0272	-0.0036	-0.75	0.0271	0.0005	0.11
9M84K7		0.0332	0.0024	0.51	0.0299	0.0033	0.73
A6GK3P		0.0363	0.0055	1.16	0.0301	0.0035	0.78
A86YRY		0.0318	0.0011	0.22	0.0272	0.0006	0.12
AE6G7B		0.0300	-0.0008	-0.16	0.0237	-0.0030	-0.66
B6BQYA		0.0242	-0.0065	-1.36	0.0203	-0.0063	-1.41
BAQ7N2		0.0209	-0.0099	-2.07	0.0197	-0.0069	-1.55
CG77J4		0.0387	0.0079	1.66	0.0340	0.0074	1.64
DDGCZ9		0.0222	-0.0085	-1.78	0.0193	-0.0074	-1.65
DUNDVV		0.0316	0.0009	0.18	0.0274	0.0008	0.17
ERHAJY		0.0327	0.0020	0.42	0.0257	-0.0010	-0.22
FLXFRL		0.0392	0.0085	1.78	0.0344	0.0078	1.73
GAZU2G		0.0212	-0.0095	-1.99	0.0202	-0.0064	-1.44
GUNDVZ		0.0328	0.0021	0.44	0.0320	0.0054	1.21
HXP7UA		0.0290	-0.0017	-0.36	0.0224	-0.0042	-0.95
K2N2R3		0.0316	0.0009	0.18	0.0253	-0.0014	-0.31
M2CE67		0.0304	-0.0003	-0.07	0.0256	-0.0010	-0.23
N2BWQ8		0.0243	-0.0065	-1.35	0.0211	-0.0056	-1.25
NA8JUJZ		0.0245	-0.0063	-1.31	0.0207	-0.0059	-1.31
NCQTLT		0.0318	0.0010	0.22	0.0309	0.0043	0.96
PEY63E		0.0356	0.0049	1.02	0.0314	0.0048	1.06
PLD9RT		0.0367	0.0059	1.24	0.0314	0.0047	1.05
Q22NNX		0.0380	0.0073	1.52	0.0300	0.0034	0.75
TBJ8Y9		0.0298	-0.0009	-0.20	0.0288	0.0022	0.48
TL3FM2		0.0343	0.0035	0.74	0.0339	0.0072	1.61
U8HHXQ		0.0288	-0.0019	-0.41	0.0248	-0.0018	-0.41
ULFA2G		0.0318	0.0011	0.22	0.0240	-0.0026	-0.59
WB9AHT		0.0358	0.0050	1.06	0.0311	0.0045	1.00
WXLZX9		0.0342	0.0035	0.73	0.0282	0.0016	0.35
X9RA9X		0.0368	0.0061	1.27	0.0310	0.0044	0.98
XDW88B		0.0318	0.0011	0.22	0.0276	0.0010	0.21
XR8J9X		0.0209	-0.0099	-2.07	0.0185	-0.0081	-1.81
Y4DUFK		0.0251	-0.0057	-1.19	0.0222	-0.0045	-0.99
YY33NY	*	0.0339	0.0032	0.67	0.0232	-0.0035	-0.78
YYXLQZ		0.0259	-0.0048	-1.00	0.0218	-0.0049	-1.09
ZB9DVK		0.0308	0.0001	0.01	0.0256	-0.0010	-0.23



Summary Statistics

	<u>Sample C05</u>	<u>Sample C06</u>
Grand Means	0.0307 inches	0.0266 inches
Stnd Dev Btwn Labs	0.0048 inches	0.0045 inches

Samples C05, C06 : Steel, Steel

Statistics based on 47 of 47 reporting participants

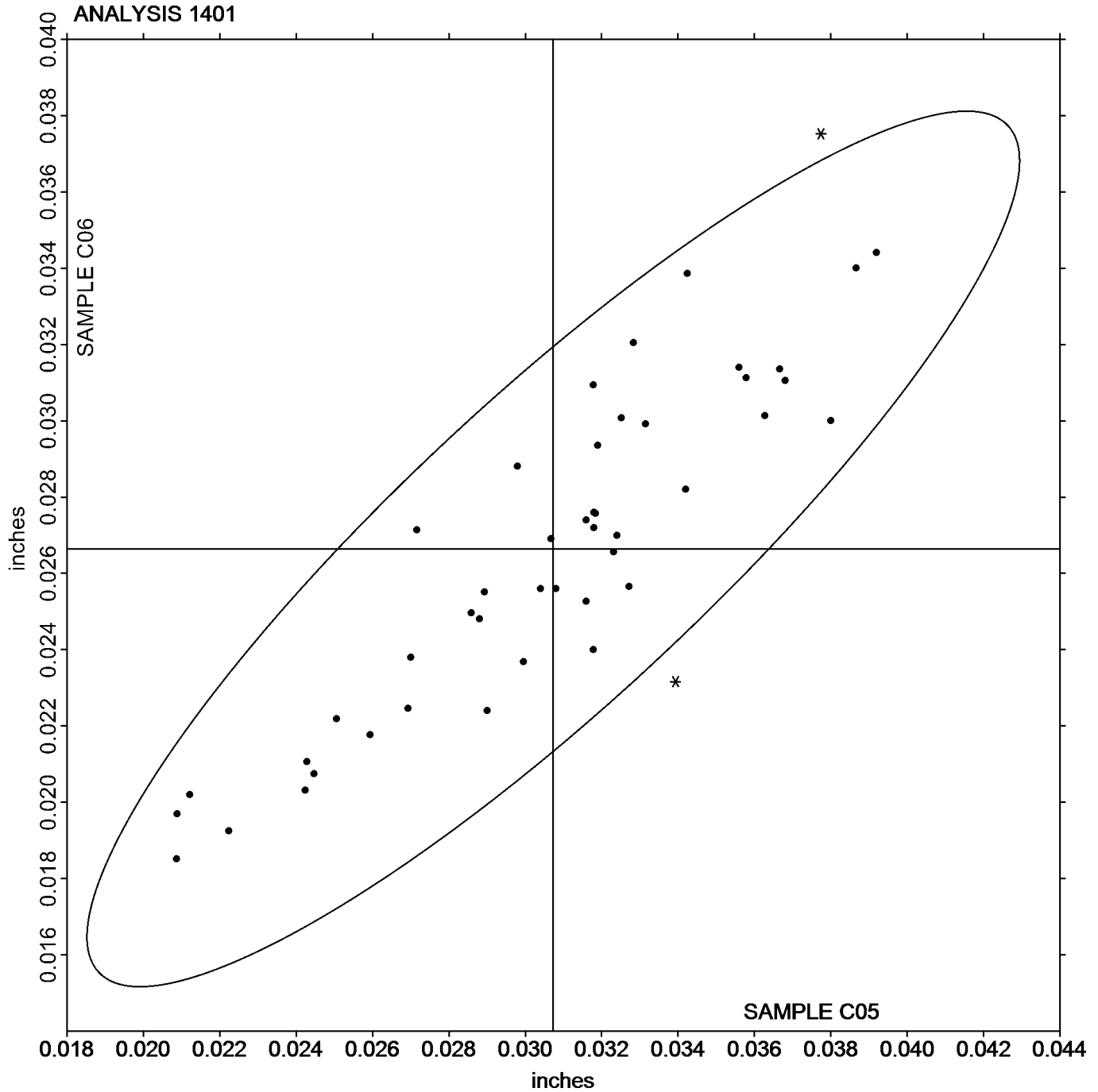


Analysis 1401

Total Case Depth
SAE J423, SAE J78

SAMPLE C05
0.0307 inches

SAMPLE C06
0.0266 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1402

Effective Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C05			Sample C06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
37Z2DJ	*	0.0271	-0.0027	-1.50	0.0260	0.0005	0.33
4DEAEL	*	0.0272	-0.0026	-1.45	0.0262	0.0007	0.45
4KMANG		0.0316	0.0017	0.95	0.0267	0.0012	0.76
4UG4RC		0.0268	-0.0030	-1.67	0.0222	-0.0033	-1.98
4VQPAF		0.0300	0.0002	0.09	0.0253	-0.0002	-0.11
6GXKFN		0.0284	-0.0014	-0.79	0.0244	-0.0011	-0.64
72AWDC		0.0300	0.0002	0.11	0.0256	0.0001	0.06
7UC9FK		0.0316	0.0018	0.99	0.0268	0.0013	0.82
896VXQ		0.0292	-0.0006	-0.35	0.0250	-0.0005	-0.28
8GX2TD	*	0.0347	0.0049	2.68	0.0299	0.0045	2.70
8RMEZV		0.0308	0.0010	0.53	0.0256	0.0001	0.08
8YVL8D		0.0307	0.0009	0.50	0.0269	0.0015	0.88
96DC8D		0.0288	-0.0011	-0.58	0.0248	-0.0007	-0.41
9BMA2R		0.0303	0.0005	0.25	0.0275	0.0021	1.26
9M84K7		0.0295	-0.0004	-0.21	0.0260	0.0006	0.36
A6GK3P		0.0310	0.0012	0.66	0.0260	0.0005	0.30
A86YRY		0.0300	0.0002	0.09	0.0252	-0.0003	-0.16
AE6G7B		0.0294	-0.0005	-0.25	0.0240	-0.0015	-0.91
B36BLC		0.0300	0.0002	0.09	0.0259	0.0004	0.25
B6BQYA	*	0.0244	-0.0054	-2.98	0.0209	-0.0046	-2.78
BAQ7N2		0.0302	0.0004	0.23	0.0262	0.0007	0.45
CG77J4		0.0273	-0.0025	-1.40	0.0216	-0.0038	-2.33
DUNDVV		0.0296	-0.0002	-0.13	0.0254	-0.0001	-0.03
E3YU6G		0.0264	-0.0035	-1.91	0.0238	-0.0017	-1.02
ERHAJY		0.0287	-0.0011	-0.63	0.0240	-0.0014	-0.87
FLXFRL		0.0338	0.0040	2.19	0.0286	0.0031	1.91
GAZU2G		0.0294	-0.0004	-0.24	0.0244	-0.0011	-0.64
GMZPR4	X	0.0270	-0.0028	-1.56	0.0310	0.0055	3.36
GUNDVZ	X	0.0290	-0.0009	-0.47	0.0291	0.0036	2.18
HXP7UA		0.0308	0.0010	0.54	0.0260	0.0005	0.33
JPRB66	*	0.0334	0.0036	1.97	0.0302	0.0047	2.88
K2N2R3		0.0281	-0.0017	-0.96	0.0235	-0.0019	-1.16
L3CWRG	X	0.0290	-0.0008	-0.45	0.0303	0.0049	2.96
M2CE67		0.0316	0.0018	0.98	0.0260	0.0005	0.33
MKPVEQ		0.0288	-0.0010	-0.55	0.0249	-0.0005	-0.32
N2BWQ8		0.0316	0.0018	0.98	0.0272	0.0018	1.07
NA8JUJZ		0.0292	-0.0006	-0.35	0.0252	-0.0003	-0.16
NCQTLD		0.0299	0.0000	0.03	0.0271	0.0016	0.97
PEY63E		0.0308	0.0010	0.54	0.0264	0.0009	0.57
PLD9RT		0.0300	0.0002	0.09	0.0250	-0.0005	-0.28
Q22NNX		0.0316	0.0018	0.98	0.0258	0.0003	0.21
Q3EDUV		0.0301	0.0003	0.15	0.0255	0.0001	0.05
RH2NPR		0.0298	0.0000	0.01	0.0252	-0.0003	-0.16
RKQJHW		0.0298	0.0000	-0.02	0.0250	-0.0005	-0.28
TBJ8Y9	X	0.0324	0.0026	1.42	0.0214	-0.0041	-2.46
TL3FM2	*	0.0269	-0.0030	-1.64	0.0260	0.0005	0.33
ULFA2G		0.0311	0.0013	0.70	0.0252	-0.0003	-0.16



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1402
Effective Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C05			Sample C06		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VPCBKB		0.0305	0.0007	0.39	0.0262	0.0008	0.48
VWWEN7		0.0304	0.0006	0.31	0.0260	0.0005	0.33
WB9AHT		0.0296	-0.0003	-0.14	0.0262	0.0008	0.46
WBRKTL		0.0298	0.0000	0.01	0.0243	-0.0012	-0.73
WDFPRK		0.0313	0.0015	0.83	0.0260	0.0005	0.32
WFM7NV		0.0302	0.0004	0.22	0.0247	-0.0008	-0.46
WXLZX9		0.0310	0.0012	0.65	0.0244	-0.0011	-0.64
X9RA9X		0.0315	0.0017	0.92	0.0256	0.0001	0.08
XDW88B		0.0300	0.0002	0.09	0.0258	0.0003	0.21
Y4DUFK		0.0291	-0.0008	-0.43	0.0251	-0.0003	-0.21
YYXLQZ		0.0288	-0.0010	-0.56	0.0235	-0.0019	-1.16
ZB9DVK		0.0280	-0.0018	-1.01	0.0232	-0.0023	-1.37

Summary Statistics				
	Sample C05		Sample C06	
Grand Means	0.0298	inches	0.0255	inches
Stnd Dev Btwn Labs	0.0018	inches	0.0016	inches

Samples C05, C06 : Steel, Steel

Statistics based on 55 of 59 reporting participants

Comments on Assigned Data Flags for Test #1402

- GMZPR4 (X) - Data for sample C06 are high.
- GUNDVZ (X) - Inconsistent in testing between samples.
- L3CWRG (X) - Data for sample C06 are high.
- TBJ8Y9 (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.

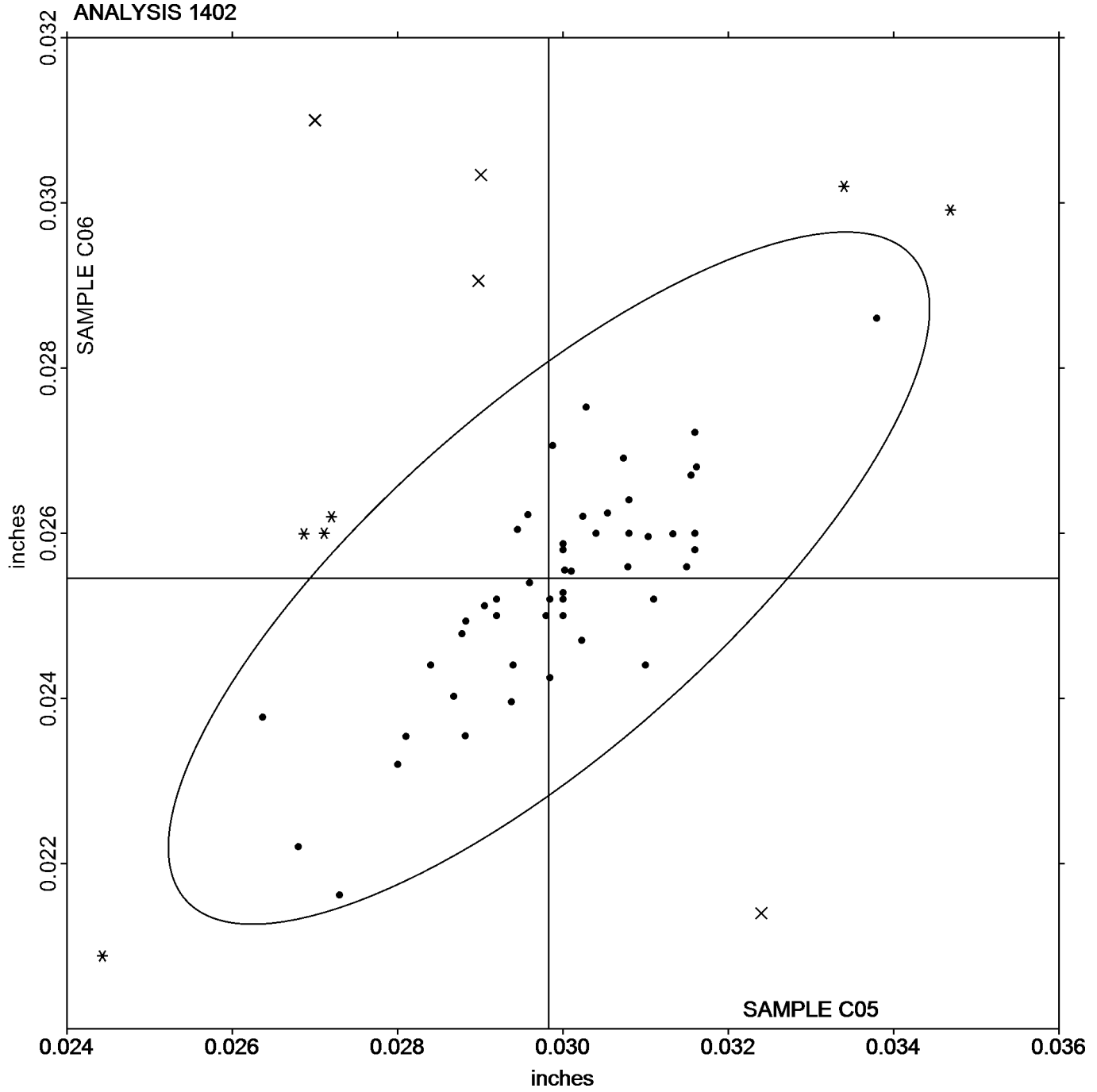


Analysis 1402

Effective Case Depth
SAE J423, SAE J78

SAMPLE C05
0.0298 inches

SAMPLE C06
0.0255 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1412

Grain Size (Inconel)
ASTM E112, ASTM E1382

WebCode	Data Flag	Sample J05			Sample J06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2XAYWH		6.30	-0.38	-0.51	7.90	-0.34	-0.44	Comparison Method
47XK4R		6.00	-0.68	-0.91	7.00	-1.24	-1.58	Comparison Method
4UG4RC		7.20	0.52	0.68	9.00	0.76	0.96	Comparison Method
64L6AQ		7.85	1.16	1.55	8.19	-0.06	-0.07	Abrams Three-Circle
6EJEAk		7.10	0.42	0.55	8.50	0.26	0.33	Comparison Method
A2HA9A		6.40	-0.28	-0.38	8.50	0.26	0.33	Comparison Method
BBZ9DK		6.78	0.10	0.13	8.36	0.12	0.15	Abrams Three-Circle
CG77J4		7.53	0.85	1.13	8.37	0.12	0.16	Automatic Image Analysis
DECYCC		6.30	-0.38	-0.51	7.50	-0.74	-0.95	Comparison Method
EGVEFC		7.50	0.81	1.08	8.44	0.20	0.25	Automatic Image Analysis
GAZU2G		6.70	0.02	0.02	8.80	0.56	0.71	N/A
HEZPUM		7.10	0.42	0.55	7.50	-0.74	-0.95	General Intercept
HXP7UA		7.20	0.52	0.68	8.80	0.56	0.71	N/A
KH7684		6.50	-0.18	-0.25	7.50	-0.74	-0.95	Automatic Image Analysis
KTC6MW		5.36	-1.33	-1.76	8.28	0.03	0.04	N/A
MJFTQ7		6.60	-0.08	-0.11	8.00	-0.24	-0.31	Comparison Method
N2Q32Q	X	10.74	4.06	5.39	8.54	0.30	0.38	Heyn Linear Intercept
N9HBXW		6.70	0.02	0.02	8.80	0.56	0.71	Comparison Method
PEY63E		8.20	1.52	2.01	9.90	1.66	2.10	Comparison Method
PLMT8B		7.00	0.32	0.42	8.50	0.26	0.33	Comparison Method
PVLL9W		5.70	-0.98	-1.31	8.60	0.36	0.45	Comparison Method
RKUYY4		7.10	0.42	0.55	8.00	-0.24	-0.31	N/A
RU62K6	*	5.70	-0.98	-1.31	6.10	-2.14	-2.72	Comparison Method
T6FXWL		6.80	0.12	0.15	8.00	-0.24	-0.31	Comparison Method
TBY2BW		6.90	0.22	0.29	9.00	0.76	0.96	Comparison Method
U6LF3P		6.70	0.02	0.02	8.20	-0.04	-0.06	Comparison Method
UXDBHR		7.60	0.92	1.22	9.50	1.26	1.60	N/A
VZC92H		6.80	0.12	0.15	9.40	1.16	1.47	Comparison Method
WFM7NV		6.00	-0.68	-0.91	8.00	-0.24	-0.31	Comparison Method
WVJ49E		8.57	1.89	2.51	9.24	1.00	1.27	General Intercept
XZ92EG		6.20	-0.48	-0.64	8.30	0.06	0.07	Comparison Method
YDJ2TY		6.08	-0.60	-0.80	8.66	0.42	0.53	Abrams Three-Circle
YTX2QP		6.10	-0.58	-0.78	7.80	-0.44	-0.56	Comparison Method
YYXLQZ		6.00	-0.68	-0.91	8.00	-0.24	-0.31	Comparison Method
ZUNMWL		5.40	-1.28	-1.71	6.90	-1.34	-1.71	Comparison Method
ZW3G6D		6.00	-0.68	-0.91	7.00	-1.24	-1.58	Comparison Method

Summary Statistics		Sample J05		Sample J06	
Grand Means		6.685	ASTM Grain Size	8.244	ASTM Grain Size
Std Dev Btwn Labs		0.752	ASTM Grain Size	0.787	ASTM Grain Size

Samples J05, J06 : Inco 718, Inco 625

Statistics based on 35 of 36 reporting participants

Comments on Assigned Data Flags for Test #1412

N2Q32Q (X) - Data for sample J05 are high.



Analysis 1412

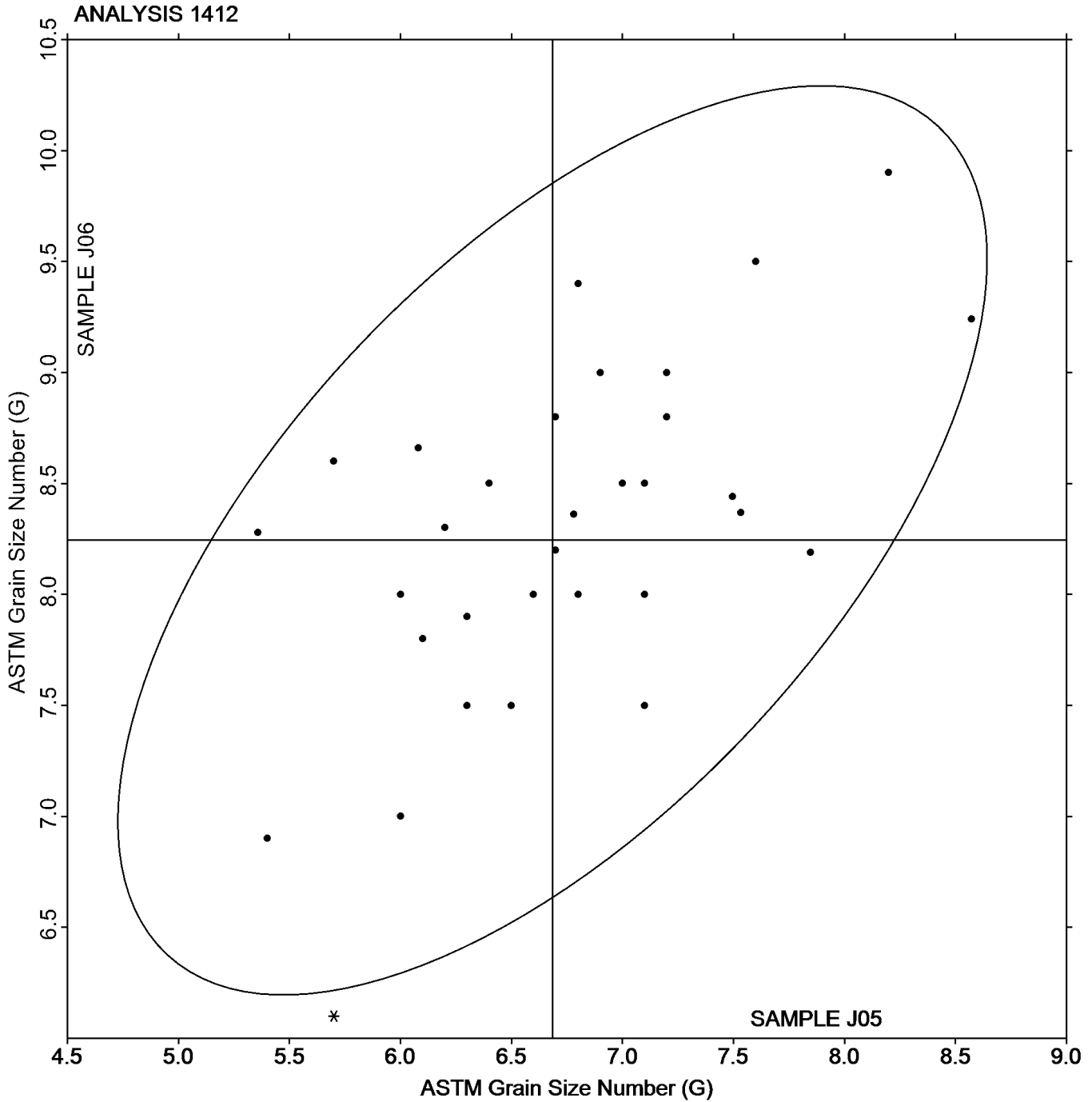
Grain Size (Inconel)
ASTM E112, ASTM E1382

SAMPLE J05

SAMPLE J06

6.685 ASTM Grain Size Number (G)

8.244 ASTM Grain Size Number (G)





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

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

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML		0.0174	0.0008	0.41	0.0316	0.0007	0.36	OE
2J7VCN	X	0.00783	-0.0088	-4.60	0.0245	-0.0064	-3.21	XX
2LWY3A		0.0157	-0.0010	-0.51	0.0290	-0.0019	-0.94	OE
2M4GYK		0.0122	-0.0044	-2.30	0.0277	-0.0032	-1.59	OE
37Z2DJ	X	0.0313	0.0147	7.67	0.0533	0.0225	11.26	GD
464ZVY		0.0167	0.0001	0.05	0.0312	0.0003	0.16	OE
6E4VLG		0.0170	0.0004	0.20	0.0301	-0.0007	-0.37	OE
89PW9E	M	No Data Reported			0.0303	-0.0005	-0.27	IC
9LUEF9		0.0180	0.0014	0.71	0.0326	0.0017	0.86	DR
9P8KQ9	X	0.0224	0.0057	2.99	0.0328	0.0020	0.98	XX
9QPB3D		0.0167	0.0000	0.01	0.0300	-0.0009	-0.44	OE
AU2V76		0.0164	-0.0002	-0.13	0.0315	0.0006	0.31	OE
B36BLC		0.0144	-0.0022	-1.17	0.0267	-0.0042	-2.11	OE
B6BQYA		0.0167	0.0000	0.01	0.0300	-0.0009	-0.44	IC
BG6K3K		0.0176	0.0010	0.50	0.0322	0.0013	0.66	OE
C9QMZ6		0.0158	-0.0009	-0.46	0.0303	-0.0006	-0.29	XX
DA67LM		0.0171	0.0005	0.24	0.0312	0.0003	0.16	OE
FVYV8Z		0.0161	-0.0005	-0.29	0.0316	0.0007	0.36	XX
GAZU2G		0.0182	0.0015	0.79	0.0318	0.0009	0.45	IC
GUNDVZ		0.0160	-0.0006	-0.34	0.0303	-0.0005	-0.27	OE
H9XKZH		0.0176	0.0010	0.50	0.0328	0.0019	0.96	OE
HB2DRV	X	0.00900	-0.0076	-3.99	0.0280	-0.0029	-1.44	WD
HQDU2H		0.0174	0.0008	0.41	0.0309	0.0000	0.00	OE
HXP7UA		0.0202	0.0035	1.84	0.0358	0.0049	2.45	OE
JX8G43		0.0177	0.0010	0.53	0.0317	0.0008	0.41	OE
KABW3X		0.0169	0.0002	0.11	0.0309	0.0001	0.03	XX
L24PM3		0.0143	-0.0023	-1.21	0.0297	-0.0012	-0.61	XX
L9384Z		0.0119	-0.0047	-2.46	0.0268	-0.0041	-2.04	OE
LLNL8Z		0.0145	-0.0021	-1.10	0.0287	-0.0022	-1.11	OE
LQL68D		0.0145	-0.0021	-1.12	0.0280	-0.0029	-1.44	IC
MYAFUD		0.0178	0.0012	0.61	0.0326	0.0017	0.86	OE
QF3KMQ	*	0.0200	0.0034	1.75	0.0300	-0.0009	-0.44	IC
RKQJHW		0.0157	-0.0010	-0.51	0.0287	-0.0022	-1.11	OE
RL9DJ8	X	0.0260	0.0094	4.88	0.0397	0.0088	4.41	OE
T9G4A7		0.0173	0.0007	0.36	0.0303	-0.0006	-0.31	OE
TH3A7B		0.0174	0.0008	0.41	0.0316	0.0007	0.36	OE
TL3FM2	X	0.0340	0.0174	9.06	0.0440	0.0131	6.58	GD
U42VJL		0.0175	0.0008	0.43	0.0316	0.0008	0.38	IC
UFBVV7		0.0156	-0.0010	-0.53	0.0301	-0.0008	-0.41	OE
W4Q4LL		0.0165	-0.0002	-0.09	0.0302	-0.0007	-0.34	OE
WBRH3G		0.0172	0.0006	0.31	0.0315	0.0006	0.30	IC
XHNEQJ		0.0187	0.0020	1.05	0.0346	0.0037	1.87	OE
XNRD4U		0.0171	0.0005	0.24	0.0326	0.0017	0.88	OE
XR8J9X		0.0174	0.0008	0.39	0.0319	0.0010	0.51	OE
Y6XZ4W		0.0119	-0.0047	-2.48	0.0276	-0.0033	-1.64	OE
YDJ2TY		0.0215	0.0049	2.55	0.0340	0.0031	1.57	OE
YGHCPY		0.0163	-0.0004	-0.20	0.0302	-0.0006	-0.32	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

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

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YY33NY		0.0177	0.0010	0.53	0.0303	-0.0006	-0.31	OE
ZGKTPN		0.0172	0.0005	0.27	0.0319	0.0010	0.50	OE
ZPR26J		0.0194	0.0028	1.44	0.0342	0.0034	1.68	OE

Summary Statistics

	Sample A05		Sample A06	
Grand Means	0.0166	Percent	0.0309	Percent
Std Dev Btwn Labs	0.0019	Percent	0.0020	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 42 of 50 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1540

- 2J7VCN (X) - Data for both samples are low. Possible Systematic Error.
- 37Z2DJ (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- 89PW9E (M) - Participant did not submit data for sample A05.
- 9P8KQ9 (X) - Data for sample A05 are high. Inconsistent within the determinations of both samples.
- HB2DRV (X) - Data for sample A05 are low.
- RL9DJ8 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample A06.
- TL3FM2 (X) - Data for both samples are high. Possible Systematic Error.



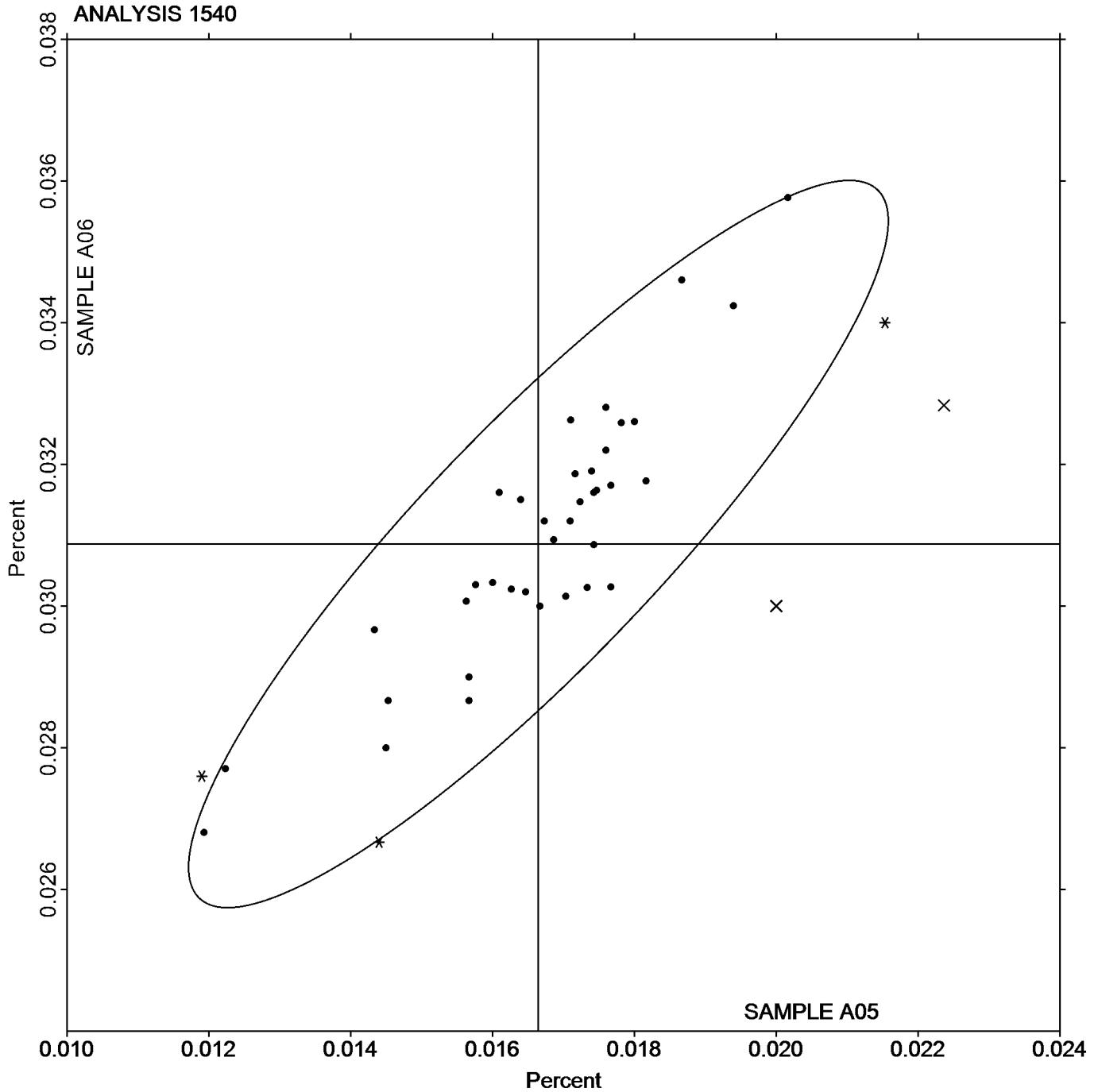
Analysis 1540

Aluminum, ZINC (Zn)

ZINC (Zn)

SAMPLE A05
0.0166 Percent

SAMPLE A06
0.0309 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1541

Aluminum, COPPER (Cu)
COPPER (Cu)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML	X	0.0167	0.0062	5.17	0.0404	0.0042	1.59	XX
2J7VCN	X	0.00270	-0.0078	-6.53	0.0301	-0.0061	-2.29	OE
2LWY3A		0.0110	0.0005	0.39	0.0360	-0.0002	-0.07	OE
2M4GYK		0.0114	0.0008	0.69	0.0381	0.0019	0.70	OE
37Z2DJ		0.00767	-0.0029	-2.39	0.0340	-0.0022	-0.82	GD
464ZVY		0.0112	0.0006	0.53	0.0366	0.0004	0.15	OE
6E4VLG		0.0102	-0.0004	-0.31	0.0362	0.0000	0.00	OE
89PW9E	M	No Data Reported			0.0317	-0.0045	-1.70	IC
9LUEF9		0.0114	0.0009	0.72	0.0382	0.0020	0.77	DR
9P8KQ9	X	0.0159	0.0054	4.50	0.0551	0.0189	7.10	XX
9QPB3D		0.00900	-0.0015	-1.28	0.0357	-0.0005	-0.20	OE
AU2V76		0.0123	0.0017	1.44	0.0362	0.0000	-0.01	OE
B36BLC		0.00853	-0.0020	-1.67	0.0301	-0.0061	-2.27	OE
B6BQYA		0.0113	0.0008	0.67	0.0380	0.0018	0.68	IC
BG6K3K		0.0105	0.0000	-0.03	0.0357	-0.0005	-0.18	OE
C9QMZ6		0.0106	0.0001	0.08	0.0363	0.0001	0.03	XX
DA67LM		0.0104	-0.0001	-0.08	0.0367	0.0005	0.18	OE
FVYV8Z		0.0105	-0.0001	-0.06	0.0370	0.0008	0.29	XX
GAZU2G		0.0129	0.0023	1.94	0.0383	0.0021	0.78	IC
GUNDVZ		0.0100	-0.0005	-0.45	0.0393	0.0031	1.18	OE
H9XKZH		0.0110	0.0005	0.39	0.0365	0.0003	0.12	OE
HB2DRV	X	0.0720	0.0615	51.23	0.1073	0.0711	26.70	WD
HQDU2H		0.0108	0.0003	0.25	0.0393	0.0031	1.17	OE
HXP7UA		0.0112	0.0007	0.55	0.0428	0.0066	2.48	OE
JX8G43		0.0117	0.0011	0.94	0.0386	0.0024	0.89	OE
KABW3X	*	0.00847	-0.0021	-1.72	0.0280	-0.0082	-3.07	XX
L24PM3		0.00900	-0.0015	-1.28	0.0333	-0.0029	-1.07	XX
L9384Z		0.0106	0.0000	0.03	0.0375	0.0013	0.49	OE
LLNL8Z		0.0104	-0.0001	-0.08	0.0353	-0.0009	-0.33	OE
LQL68D		0.0110	0.0005	0.39	0.0340	-0.0022	-0.82	IC
MYAFUD		0.0108	0.0003	0.24	0.0364	0.0002	0.09	OE
QF3KMQ		0.0100	-0.0005	-0.45	0.0400	0.0038	1.43	IC
RKQJHW		0.00767	-0.0029	-2.39	0.0300	-0.0062	-2.32	OE
RL9DJ8	X	0.0173	0.0068	5.67	0.0267	-0.0095	-3.58	OE
T9G4A7		0.0106	0.0001	0.08	0.0354	-0.0008	-0.29	OE
TH3A7B		0.0114	0.0009	0.72	0.0367	0.0005	0.18	OE
TL3FM2	X	0.00700	-0.0035	-2.95	0.0370	0.0008	0.30	GD
U42VJL		0.0115	0.0010	0.80	0.0381	0.0019	0.73	IC
UFBVV7		0.0114	0.0009	0.72	0.0391	0.0029	1.08	OE
W4Q4LL		0.0102	-0.0003	-0.28	0.0351	-0.0011	-0.41	OE
WBRH3G		0.0107	0.0001	0.11	0.0360	-0.0002	-0.07	IC
XHNEQJ		0.0111	0.0006	0.50	0.0368	0.0006	0.23	OE
XNRD4U		0.0100	-0.0005	-0.43	0.0367	0.0005	0.20	OE
XR8J9X		0.0104	-0.0001	-0.11	0.0335	-0.0027	-1.00	OE
Y6XZ4W		0.00783	-0.0027	-2.25	0.0339	-0.0023	-0.87	OE
YDJ2TY	X	0.00450	-0.0060	-5.03	0.0349	-0.0013	-0.48	OE
YGHCPY		0.0123	0.0018	1.47	0.0361	-0.0001	-0.03	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1541

Aluminum, COPPER (Cu)
COPPER (Cu)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YY33NY		0.0117	0.0012	0.97	0.0368	0.0006	0.22	OE
ZGKTPN		0.0107	0.0002	0.14	0.0354	-0.0008	-0.30	OE
ZPR26J		0.0111	0.0006	0.50	0.0365	0.0003	0.12	OE

Summary Statistics

	Sample A05		Sample A06	
Grand Means	0.0105	Percent	0.0362	Percent
Stnd Dev Btwn Labs	0.0012	Percent	0.0027	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 42 of 50 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1541

- 2FXDML (X) - Data for sample A05 are high.
- 2J7VCN (X) - Data for sample A05 are low.
- 89PW9E (M) - Participant did not submit data for sample A05.
- 9P8KQ9 (X) - Data for both samples are high. Inconsistent within the determinations of both samples.
- HB2DRV (X) - Data for both samples are high. Inconsistent within the determinations of sample A06.
- RL9DJ8 (X) - Data for sample A05 are high and data for sample A06 are low. Inconsistent within the determinations of both samples.
- TL3FM2 (X) - Data for sample A05 are low.
- YDJ2TY (X) - Data for sample A05 are low. Inconsistent within the determinations of both samples.



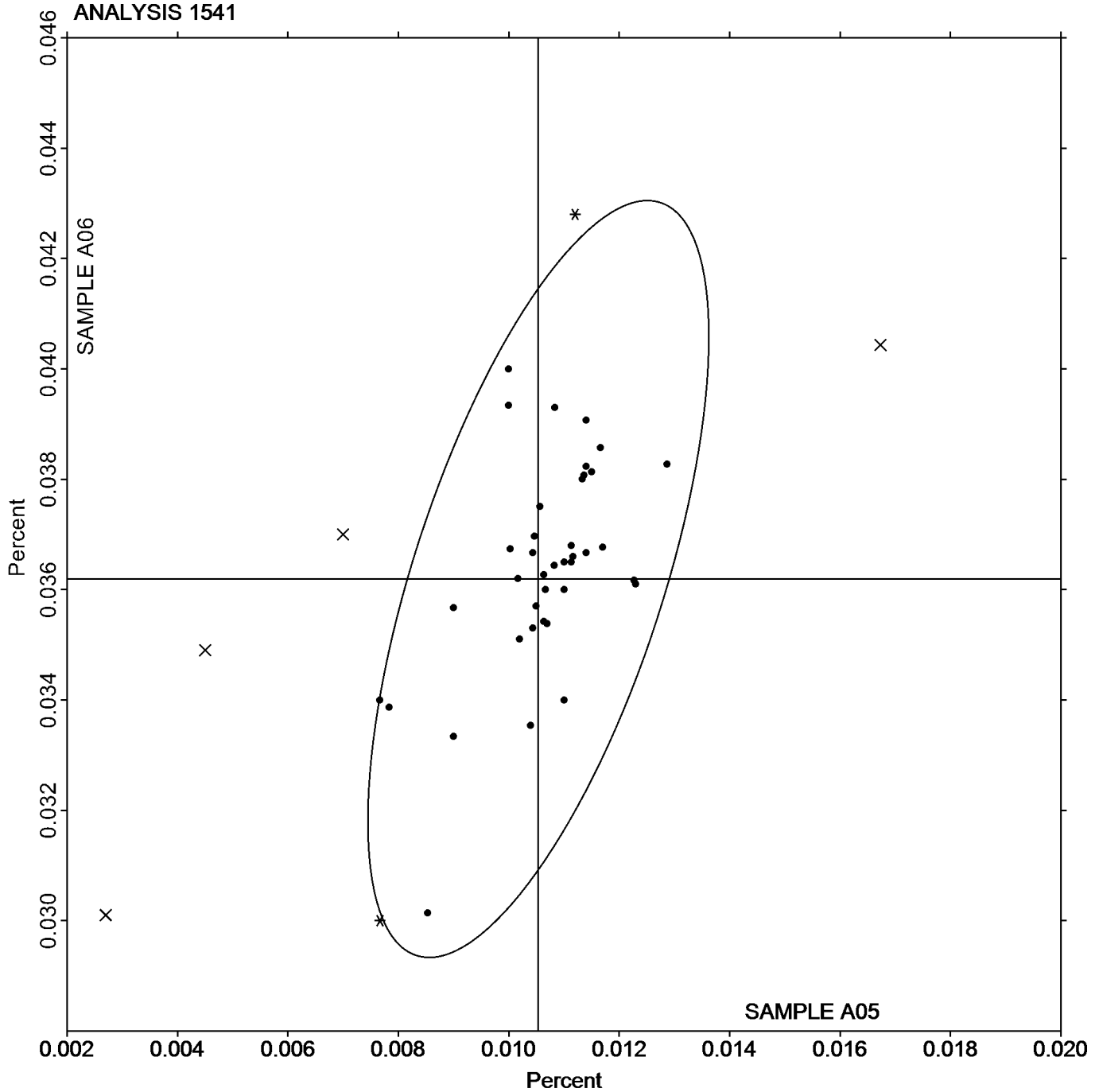
Analysis 1541

Aluminum, COPPER (Cu)

COPPER (Cu)

SAMPLE A05
0.0105 Percent

SAMPLE A06
0.0362 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1542

Aluminum, IRON (Fe)
IRON (Fe)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML		0.2040	0.0069	1.06	0.1917	0.0103	1.73	XX
2J7VCN		0.2017	0.0046	0.70	0.1883	0.0069	1.17	OE
2LWY3A		0.1997	0.0026	0.39	0.1830	0.0016	0.27	OE
2M4GYK	*	0.1797	-0.0174	-2.68	0.1653	-0.0161	-2.71	OE
37Z2DJ		0.1993	0.0022	0.34	0.1830	0.0016	0.27	GD
464ZVY		0.2007	0.0036	0.55	0.1847	0.0033	0.55	OE
6E4VLG		0.1903	-0.0068	-1.04	0.1770	-0.0044	-0.74	OE
89PW9E		0.1957	-0.0014	-0.22	0.1777	-0.0037	-0.63	IC
9LUEF9		0.1990	0.0019	0.29	0.1847	0.0033	0.55	DR
9P8KQ9		0.1937	-0.0034	-0.53	0.1760	-0.0054	-0.91	XX
9QPB3D		0.1903	-0.0068	-1.04	0.1757	-0.0057	-0.97	OE
AU2V76		0.2003	0.0032	0.50	0.1850	0.0036	0.61	OE
B36BLC	X	0.1924	-0.0047	-0.73	0.1652	-0.0162	-2.73	XX
B6BQYA		0.1937	-0.0034	-0.53	0.1820	0.0006	0.10	IC
BG6K3K		0.1950	-0.0021	-0.32	0.1820	0.0006	0.10	OE
C9QMZ6		0.1996	0.0025	0.38	0.1835	0.0021	0.35	XX
DA67LM		0.1902	-0.0069	-1.07	0.1753	-0.0061	-1.03	OE
FVYV8Z		0.2007	0.0036	0.55	0.1843	0.0029	0.49	IC
GAZU2G		0.2070	0.0099	1.52	0.1900	0.0086	1.45	IC
GUNDVZ		0.1960	-0.0011	-0.17	0.1817	0.0003	0.04	OE
H9XKZH		0.1991	0.0020	0.31	0.1822	0.0008	0.13	OE
HB2DRV	X	0.2530	0.0559	8.60	0.2370	0.0556	9.37	WD
HQDU2H	X	0.1974	0.0003	0.05	0.2011	0.0197	3.33	OE
HXP7UA		0.1933	-0.0038	-0.58	0.1777	-0.0037	-0.63	OE
JX8G43		0.1977	0.0006	0.09	0.1824	0.0010	0.16	OE
KABW3X		0.1957	-0.0014	-0.22	0.1813	-0.0001	-0.01	XX
L24PM3		0.2080	0.0109	1.68	0.1903	0.0089	1.50	XX
L9384Z		0.1994	0.0023	0.36	0.1852	0.0038	0.64	OE
LLNL8Z		0.1943	-0.0028	-0.43	0.1810	-0.0004	-0.07	OE
LQL68D		0.1845	-0.0126	-1.94	0.1675	-0.0139	-2.34	IC
MYAFUD		0.1941	-0.0030	-0.46	0.1778	-0.0036	-0.60	OE
QF3KMQ		0.2033	0.0062	0.96	0.1833	0.0019	0.32	IC
RKQJHW		0.1987	0.0016	0.24	0.1810	-0.0004	-0.07	OE
RL9DJ8	X	0.1720	-0.0251	-3.86	0.1700	-0.0114	-1.92	OE
T9G4A7		0.2037	0.0066	1.02	0.1829	0.0015	0.25	OE
TH3A7B		0.1997	0.0026	0.39	0.1830	0.0016	0.27	OE
TL3FM2	X	0.2230	0.0259	3.98	0.2030	0.0216	3.64	GD
U42VJL		0.1997	0.0026	0.39	0.1830	0.0016	0.27	IC
UFBVV7		0.2064	0.0093	1.44	0.1905	0.0091	1.54	OE
W4Q4LL		0.1878	-0.0093	-1.44	0.1729	-0.0085	-1.43	OE
WBRH3G		0.2100	0.0129	1.98	0.1910	0.0096	1.62	IC
XHNEQJ		0.1967	-0.0004	-0.06	0.1803	-0.0011	-0.19	OE
XNRD4U		0.1945	-0.0026	-0.39	0.1801	-0.0013	-0.23	OE
XR8J9X		0.2040	0.0069	1.06	0.1877	0.0063	1.06	OE
Y6XZ4W		0.1921	-0.0050	-0.77	0.1781	-0.0033	-0.55	OE
YDJ2TY		0.1807	-0.0164	-2.53	0.1673	-0.0141	-2.37	OE
YGHCPY		0.1996	0.0025	0.38	0.1847	0.0033	0.56	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1542

Aluminum, IRON (Fe)
IRON (Fe)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YY33NY	*	0.2063	0.0092	1.42	0.1957	0.0143	2.40	OE
ZGKTPN		0.1980	0.0009	0.13	0.1801	-0.0013	-0.21	OE
ZPR26J		0.1950	-0.0021	-0.32	0.1797	-0.0017	-0.29	OE

Summary Statistics

	Sample A05		Sample A06	
Grand Means	0.1971	Percent	0.1814	Percent
Stnd Dev Btwn Labs	0.0065	Percent	0.0059	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 44 of 50 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1542

- B36BLC (X) - Data for sample A06 are low. Inconsistent within the determinations of sample A06.
- HB2DRV (X) - Data for both samples are high. Possible Systematic Error.
- HQDU2H (X) - Data for sample A06 are high.
- RL9DJ8 (X) - Data for sample A05 are low.
- TL3FM2 (X) - Data for both samples are high. Possible Systematic Error.



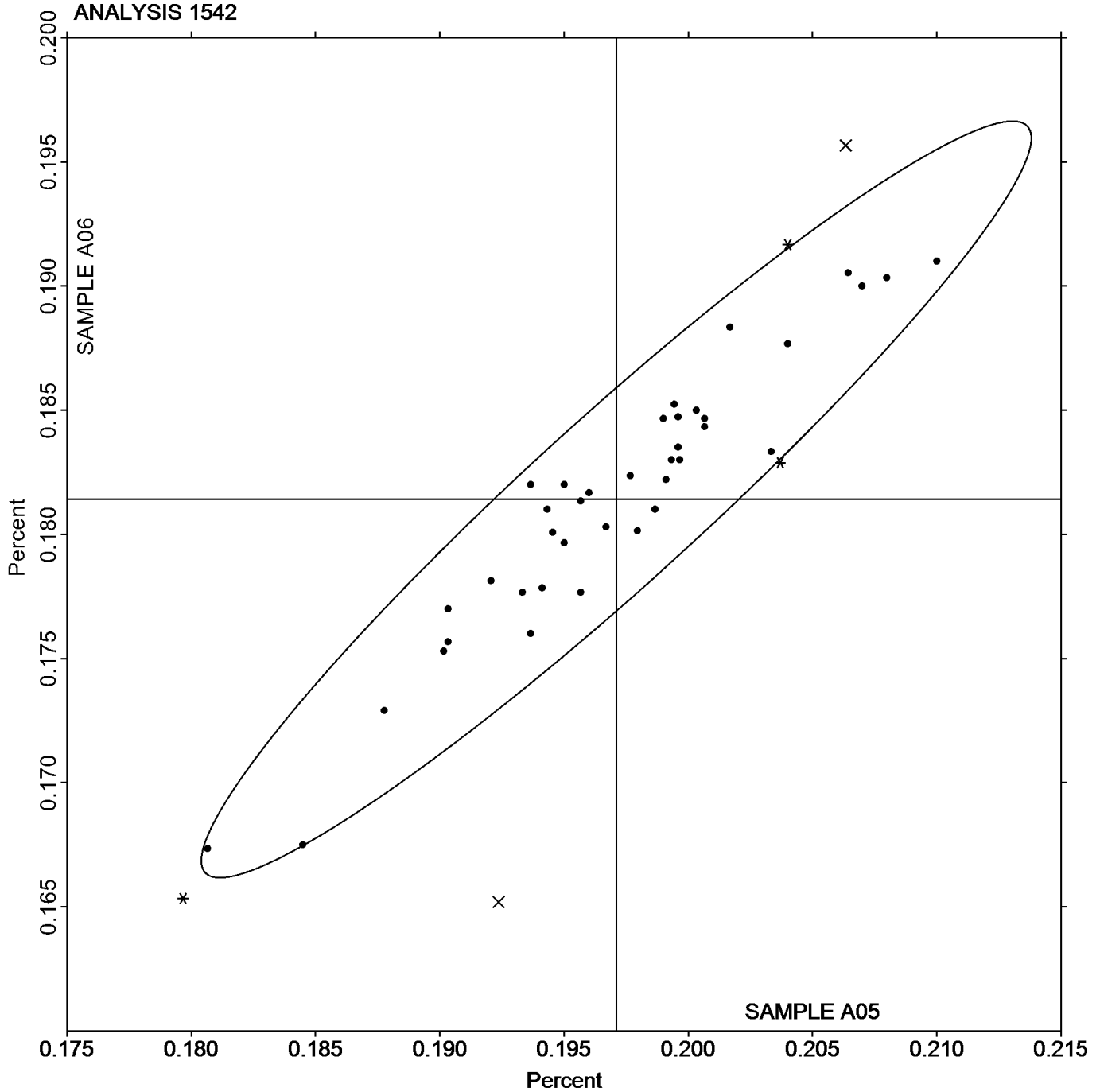
Analysis 1542

Aluminum, IRON (Fe)

IRON (Fe)

SAMPLE A05
0.1971 Percent

SAMPLE A06
0.1814 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148

Analysis 1543

4th Qtr 2024

Aluminum, SILICON (Si)
SILICON (Si)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML		0.4893	-0.0137	-1.89	0.4543	-0.0069	-1.10	XX
2J7VCN	X	0.4690	-0.0341	-4.68	0.4160	-0.0453	-7.15	OE
2LWY3A		0.4993	-0.0037	-0.51	0.4550	-0.0063	-0.99	OE
2M4GYK	X	0.5483	0.0453	6.23	0.5007	0.0394	6.22	OE
37Z2DJ	X	0.5633	0.0603	8.29	0.4983	0.0371	5.85	GD
464ZVY		0.5003	-0.0027	-0.37	0.4587	-0.0026	-0.41	OE
6E4VLG		0.5077	0.0046	0.63	0.4663	0.0051	0.80	OE
89PW9E		0.4970	-0.0061	-0.83	0.4550	-0.0063	-0.99	IC
9LUJF9		0.5017	-0.0014	-0.19	0.4563	-0.0049	-0.78	DR
9P8KQ9		0.5177	0.0146	2.01	0.4683	0.0071	1.11	XX
9QPB3D		0.5077	0.0046	0.63	0.4630	0.0017	0.27	OE
AU2V76		0.4940	-0.0091	-1.25	0.4563	-0.0049	-0.78	OE
B36BLC	X	0.4722	-0.0309	-4.25	0.4308	-0.0305	-4.81	OE
B6BQYA		0.5020	-0.0011	-0.15	0.4607	-0.0006	-0.10	IC
BG6K3K		0.4970	-0.0061	-0.83	0.4670	0.0057	0.90	OE
C9QMZ6		0.5119	0.0089	1.22	0.4647	0.0035	0.54	XX
DA67LM		0.5051	0.0020	0.28	0.4675	0.0062	0.98	OE
FVYV8Z		0.4927	-0.0104	-1.43	0.4580	-0.0033	-0.52	IC
GAZU2G		0.5027	-0.0004	-0.05	0.4620	0.0007	0.11	IC
GMZPR4		0.4900	-0.0131	-1.80	0.4450	-0.0163	-2.57	OE
GUNDVZ		0.5050	0.0019	0.27	0.4600	-0.0013	-0.20	OE
H9XKZH		0.5107	0.0076	1.05	0.4678	0.0065	1.03	OE
HB2DRV	X	0.5337	0.0306	4.21	0.5117	0.0504	7.95	WD
HQDU2H		0.5048	0.0017	0.24	0.4712	0.0099	1.56	OE
HXP7UA		0.5130	0.0099	1.37	0.4643	0.0031	0.48	OE
JX8G43		0.4930	-0.0101	-1.39	0.4531	-0.0082	-1.29	OE
KABW3X		0.5097	0.0066	0.91	0.4687	0.0074	1.17	XX
L24PM3	X	0.4463	-0.0567	-7.80	0.4270	-0.0343	-5.41	XX
L9384Z		0.5056	0.0025	0.35	0.4626	0.0014	0.21	OE
LLNL8Z		0.5023	-0.0007	-0.10	0.4623	0.0011	0.17	XX
LQL68D	X	0.5870	0.0839	11.54	0.5350	0.0737	11.63	IC
MYAFUD		0.4971	-0.0060	-0.82	0.4571	-0.0042	-0.67	OE
QF3KMQ		0.5133	0.0103	1.41	0.4733	0.0121	1.90	IC
RKQJHW	X	0.4690	-0.0341	-4.68	0.4290	-0.0323	-5.10	OE
RL9DJ8	X	0.3940	-0.1091	-15.00	0.3587	-0.1026	-16.20	OE
T9G4A7		0.5104	0.0073	1.01	0.4567	-0.0045	-0.72	OE
TH3A7B		0.5030	-0.0001	-0.01	0.4610	-0.0003	-0.04	OE
TL3FM2	X	0.4880	-0.0151	-2.07	0.4330	-0.0283	-4.46	GD
U42VJL		0.5073	0.0043	0.59	0.4690	0.0077	1.22	WC
UFBV7		0.5066	0.0035	0.49	0.4636	0.0023	0.36	OE
WBRH3G		0.5133	0.0103	1.41	0.4633	0.0021	0.32	IC
XHNEQJ		0.5027	-0.0004	-0.05	0.4584	-0.0029	-0.46	OE
XNRD4U		0.5051	0.0021	0.29	0.4628	0.0015	0.24	OE
XR8J9X		0.5110	0.0079	1.09	0.4697	0.0084	1.32	OE
Y6XZ4W		0.5030	-0.0001	-0.01	0.4613	0.0000	0.00	OE
YDJ2TY		0.4850	-0.0181	-2.48	0.4463	-0.0149	-2.36	OE
YGHCPY		0.5020	-0.0011	-0.15	0.4595	-0.0018	-0.29	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1543

Aluminum, SILICON (Si)
SILICON (Si)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YY33NY		0.4993	-0.0037	-0.51	0.4640	0.0027	0.43	OE
ZGKTPN		0.5043	0.0013	0.18	0.4651	0.0039	0.61	OE
ZPR26J		0.4987	-0.0044	-0.60	0.4520	-0.0093	-1.47	OE

Summary Statistics

	Sample A05		Sample A06	
Grand Means	0.5031	Percent	0.4613	Percent
Stnd Dev Btwn Labs	0.0073	Percent	0.0063	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 40 of 50 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	GD	Spectrometry - Glow Discharge (GDS)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
WC	Wet Chemistry	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XX	Please Indicate Method Used for Current Element		

Comments on Assigned Data Flags for Test #1543

- 2J7VCN (X) - Data for both samples are low. Possible Systematic Error.
- 2M4GYK (X) - Data for both samples are high. Possible Systematic Error.
- 37Z2DJ (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- B36BLC (X) - Data for both samples are low. Possible Systematic Error.
- HB2DRV (X) - Data for both samples are high. Possible Systematic Error.
- L24PM3 (X) - Data for both samples are low. Possible Systematic Error.
- LQL68D (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample A06.
- RKQJHW (X) - Data for both samples are low. Possible Systematic Error.
- RL9DJ8 (X) - Data for both samples are low. Possible Systematic Error.
- TL3FM2 (X) - Data for sample A06 are low.



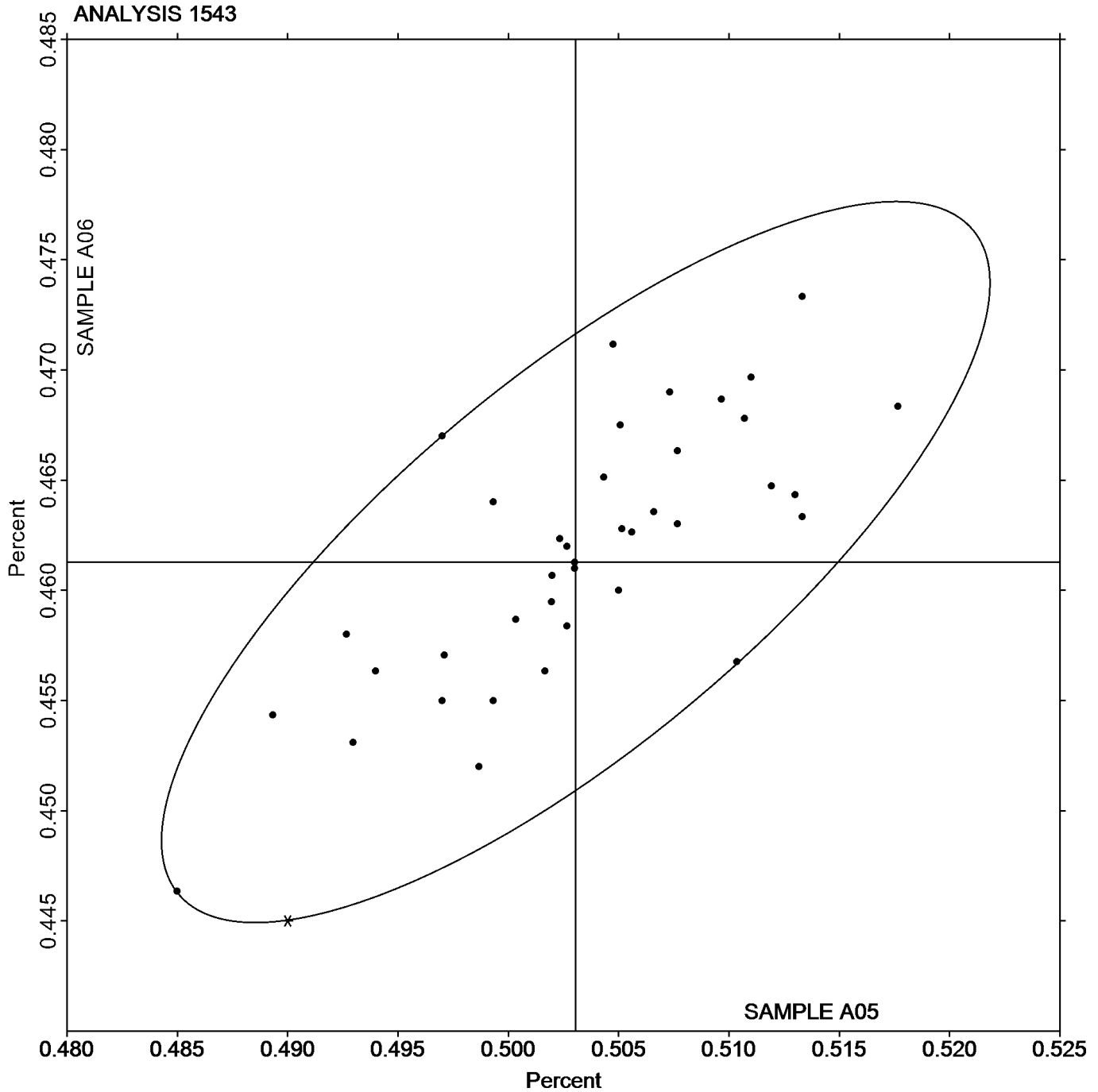
Analysis 1543

Aluminum, SILICON (Si)

SILICON (Si)

SAMPLE A05
0.5031 Percent

SAMPLE A06
0.4613 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1544

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML		0.0330	0.0006	0.43	0.0659	-0.0017	-0.65	XX
2J7VCN		0.0327	0.0003	0.20	0.0709	0.0033	1.27	OE
2LWY3A		0.0330	0.0005	0.40	0.0687	0.0011	0.41	OE
2M4GYK		0.0297	-0.0027	-2.04	0.0608	-0.0068	-2.64	OE
37Z2DJ		0.0337	0.0012	0.90	0.0743	0.0067	2.59	GD
464ZVY		0.0329	0.0004	0.33	0.0676	0.0000	-0.01	OE
6E4VLG		0.0293	-0.0032	-2.39	0.0652	-0.0024	-0.92	OE
89PW9E		0.0310	-0.0015	-1.09	0.0640	-0.0036	-1.39	IC
9LUEF9		0.0337	0.0012	0.90	0.0693	0.0017	0.66	DR
9P8KQ9	X	0.0324	0.0000	-0.02	0.0555	-0.0121	-4.67	XX
9QPB3D		0.0320	-0.0005	-0.35	0.0660	-0.0016	-0.62	OE
AU2V76		0.0336	0.0012	0.87	0.0653	-0.0023	-0.88	OE
B36BLC		0.0323	-0.0002	-0.12	0.0719	0.0043	1.64	OE
B6BQYA		0.0330	0.0005	0.40	0.0717	0.0041	1.56	IC
BG6K3K		0.0344	0.0019	1.45	0.0720	0.0044	1.69	OE
C9QMZ6		0.0318	-0.0007	-0.50	0.0631	-0.0045	-1.73	XX
DA67LM		0.0335	0.0010	0.77	0.0677	0.0001	0.03	OE
FVYV8Z		0.0326	0.0001	0.08	0.0667	-0.0009	-0.37	IC
GAZU2G		0.0330	0.0006	0.43	0.0670	-0.0006	-0.24	IC
GMZPR4		0.0330	0.0005	0.40	0.0690	0.0014	0.53	OE
GUNDVZ		0.0320	-0.0005	-0.35	0.0670	-0.0006	-0.24	OE
H9XKZH		0.0332	0.0007	0.55	0.0696	0.0020	0.76	OE
HB2DRV	X	0.0297	-0.0028	-2.09	0.0747	0.0071	2.72	WD
HQDU2H	X	0.0396	0.0071	5.30	0.0723	0.0047	1.82	OE
HXP7UA		0.0309	-0.0016	-1.17	0.0651	-0.0025	-0.96	OE
JX8G43		0.0343	0.0019	1.40	0.0686	0.0010	0.37	OE
KABW3X		0.0335	0.0010	0.75	0.0672	-0.0004	-0.16	XX
L24PM3		0.0330	0.0005	0.40	0.0680	0.0004	0.15	XX
L9384Z		0.0338	0.0013	0.97	0.0692	0.0016	0.61	OE
LLNL8Z		0.0324	0.0000	-0.02	0.0686	0.0010	0.38	OE
LQL68D	*	0.0285	-0.0040	-2.96	0.0625	-0.0051	-1.97	IC
MYAFUD		0.0328	0.0004	0.28	0.0664	-0.0012	-0.48	OE
QF3KMQ		0.0300	-0.0025	-1.84	0.0700	0.0024	0.92	IC
RKQJHW		0.0327	0.0002	0.15	0.0677	0.0001	0.02	OE
RL9DJ8		0.0350	0.0025	1.89	0.0690	0.0014	0.53	OE
T9G4A7		0.0337	0.0013	0.95	0.0683	0.0006	0.25	OE
TH3A7B		0.0331	0.0007	0.50	0.0690	0.0014	0.55	OE
TL3FM2		0.0310	-0.0015	-1.09	0.0700	0.0024	0.92	GD
U42VJL		0.0336	0.0011	0.85	0.0683	0.0007	0.28	IC
UFBV7	X	0.0404	0.0079	5.92	0.0724	0.0048	1.84	OE
W4Q4LL		0.0335	0.0010	0.77	0.0678	0.0002	0.07	OE
WBRH3G		0.0321	-0.0003	-0.25	0.0697	0.0021	0.79	IC
XHNEQJ		0.0322	-0.0003	-0.20	0.0651	-0.0025	-0.96	OE
XNRD4U		0.0324	-0.0001	-0.06	0.0675	-0.0001	-0.04	OE
XR8J9X		0.0320	-0.0005	-0.37	0.0656	-0.0020	-0.78	OE
Y6XZ4W		0.0303	-0.0022	-1.64	0.0637	-0.0039	-1.51	OE
YDJ2TY		0.0321	-0.0004	-0.27	0.0660	-0.0016	-0.62	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1544

Aluminum, MANGANESE (Mn)
MANGANESE (Mn)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YGHCPY		0.0332	0.0008	0.58	0.0695	0.0019	0.73	OE
YY33NY		0.0319	-0.0006	-0.42	0.0677	0.0001	0.02	OE
ZGKTPN		0.0322	-0.0002	-0.17	0.0669	-0.0007	-0.28	OE
ZPR26J		0.0320	-0.0004	-0.32	0.0669	-0.0007	-0.28	OE

Summary Statistics

	Sample A05		Sample A06	
Grand Means	0.0325	Percent	0.0676	Percent
Stnd Dev Btwn Labs	0.0013	Percent	0.0026	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 47 of 51 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1544

- 9P8KQ9 (X) - Data for sample A06 are low. Inconsistent within the determinations of sample A06.
- HB2DRV (X) - Data for sample A06 are high. Inconsistent within the determinations of sample A06.
- HQDU2H (X) - Data for sample A05 are high.
- UFBV7 (X) - Data for sample A05 are high.



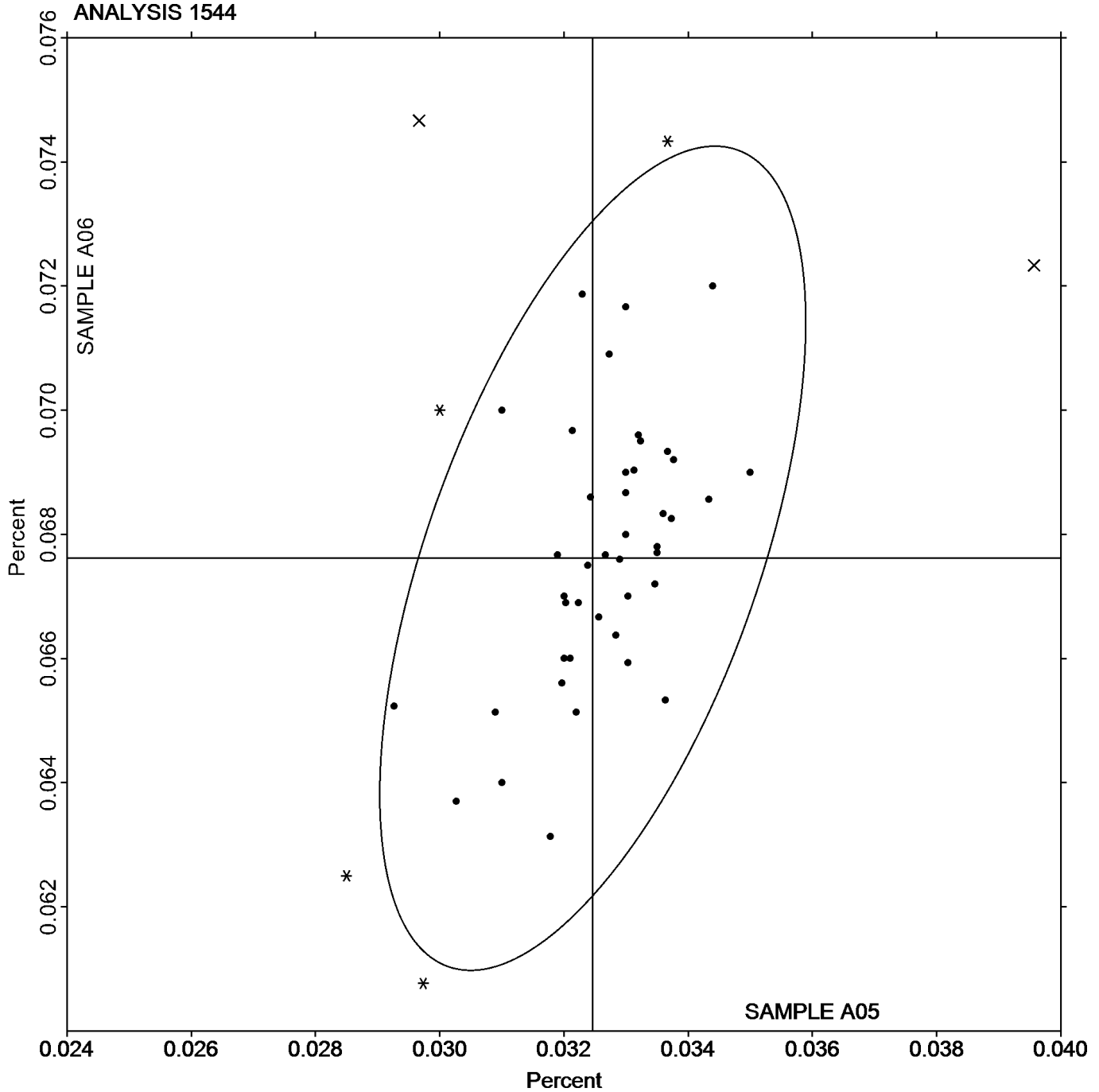
Analysis 1544

Aluminum, MANGANESE (Mn)

MANGANESE (Mn)

SAMPLE A05
0.0325 Percent

SAMPLE A06
0.0676 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1545

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML		0.5693	0.0158	0.77	0.4553	0.0149	0.82	XX
2J7VCN		0.5217	-0.0319	-1.55	0.3993	-0.0411	-2.27	OE
2LWY3A		0.5173	-0.0362	-1.76	0.4100	-0.0305	-1.68	OE
2M4GYK		0.5703	0.0168	0.82	0.4477	0.0072	0.40	XX
37Z2DJ		0.5557	0.0021	0.10	0.4190	-0.0215	-1.18	GD
464ZVY		0.5513	-0.0022	-0.11	0.4383	-0.0021	-0.12	OE
6E4VLG		0.5560	0.0024	0.12	0.4363	-0.0041	-0.23	OE
89PW9E		0.5367	-0.0169	-0.82	0.4263	-0.0141	-0.78	IC
9LUEF9		0.5597	0.0061	0.30	0.4470	0.0065	0.36	DR
9P8KQ9		0.5533	-0.0002	-0.01	0.4357	-0.0048	-0.26	XX
9QPB3D		0.6087	0.0551	2.68	0.4797	0.0392	2.16	OE
AU2V76		0.5467	-0.0069	-0.34	0.4443	0.0039	0.21	OE
B36BLC		0.4991	-0.0545	-2.65	0.4030	-0.0375	-2.07	OE
B6BQYA		0.5517	-0.0019	-0.09	0.4373	-0.0031	-0.17	IC
BG6K3K		0.5730	0.0194	0.95	0.4780	0.0375	2.07	OE
C9QMZ6		0.5626	0.0091	0.44	0.4584	0.0179	0.99	XX
DA67LM		0.5605	0.0070	0.34	0.4373	-0.0032	-0.17	OE
FVYV8Z		0.5487	-0.0049	-0.24	0.4470	0.0065	0.36	IC
GAZU2G		0.5523	-0.0012	-0.06	0.4507	0.0102	0.56	IC
GMZPR4		0.5490	-0.0046	-0.22	0.4370	-0.0035	-0.19	OE
GUNDVZ		0.5517	-0.0019	-0.09	0.4403	-0.0001	-0.01	OE
H9XKZH		0.5509	-0.0027	-0.13	0.4369	-0.0036	-0.20	OE
HB2DRV	X	2.149	1.5951	77.66	1.784	1.3432	74.14	WD
HQDU2H		0.5570	0.0035	0.17	0.4572	0.0167	0.92	OE
HXP7UA		0.5383	-0.0152	-0.74	0.4250	-0.0155	-0.85	OE
JX8G43		0.5538	0.0003	0.01	0.4417	0.0012	0.07	OE
KABW3X		0.5723	0.0188	0.91	0.4553	0.0149	0.82	XX
L24PM3		0.5910	0.0374	1.82	0.4580	0.0175	0.97	XX
L9384Z		0.5611	0.0075	0.37	0.4448	0.0043	0.24	OE
LLNL8Z		0.5490	-0.0046	-0.22	0.4343	-0.0061	-0.34	OE
LQL68D		0.5655	0.0119	0.58	0.4440	0.0035	0.20	IC
MYAFUD		0.5497	-0.0038	-0.19	0.4355	-0.0050	-0.28	OE
QF3KMQ		0.5467	-0.0069	-0.34	0.4200	-0.0205	-1.13	IC
RKQJHW		0.5430	-0.0106	-0.51	0.4337	-0.0068	-0.38	OE
RL9DJ8		0.5207	-0.0329	-1.60	0.4190	-0.0215	-1.18	OE
T9G4A7		0.5498	-0.0038	-0.18	0.4510	0.0105	0.58	OE
TH3A7B		0.5490	-0.0046	-0.22	0.4370	-0.0035	-0.19	OE
TL3FM2		0.5750	0.0214	1.04	0.4480	0.0075	0.42	GD
U42VJL		0.5503	-0.0032	-0.16	0.4380	-0.0025	-0.14	IC
UFBV7		0.5993	0.0457	2.23	0.4737	0.0332	1.83	OE
W4Q4LL		0.5140	-0.0396	-1.93	0.4133	-0.0271	-1.50	OE
WBRH3G		0.5650	0.0114	0.56	0.4467	0.0062	0.34	IC
XHNEQJ		0.5534	-0.0002	-0.01	0.4429	0.0025	0.14	OE
XNRD4U		0.5499	-0.0037	-0.18	0.4354	-0.0051	-0.28	OE
XR8J9X		0.5250	-0.0286	-1.39	0.4190	-0.0215	-1.18	OE
Y6XZ4W		0.5392	-0.0144	-0.70	0.4285	-0.0120	-0.66	OE
YDJ2TY		0.5443	-0.0092	-0.45	0.4377	-0.0028	-0.15	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1545

Aluminum, MAGNESIUM (Mg)
MAGNESIUM (Mg)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YGHCPY		0.5876	0.0340	1.66	0.4894	0.0489	2.70	OE
YY33NY		0.5730	0.0194	0.95	0.4487	0.0082	0.45	OE
ZGKTPN		0.5556	0.0020	0.10	0.4401	-0.0004	-0.02	OE
ZPR26J	X	0.4737	-0.0799	-3.89	0.3727	-0.0678	-3.74	OE

Summary Statistics

	Sample A05		Sample A06	
Grand Means	0.5536	Percent	0.4405	Percent
Stnd Dev Btwn Labs	0.0205	Percent	0.0181	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 49 of 51 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1545

HB2DRV (X) - Extreme data.

ZPR26J (X) - Data for both samples are low. Possible Systematic Error.



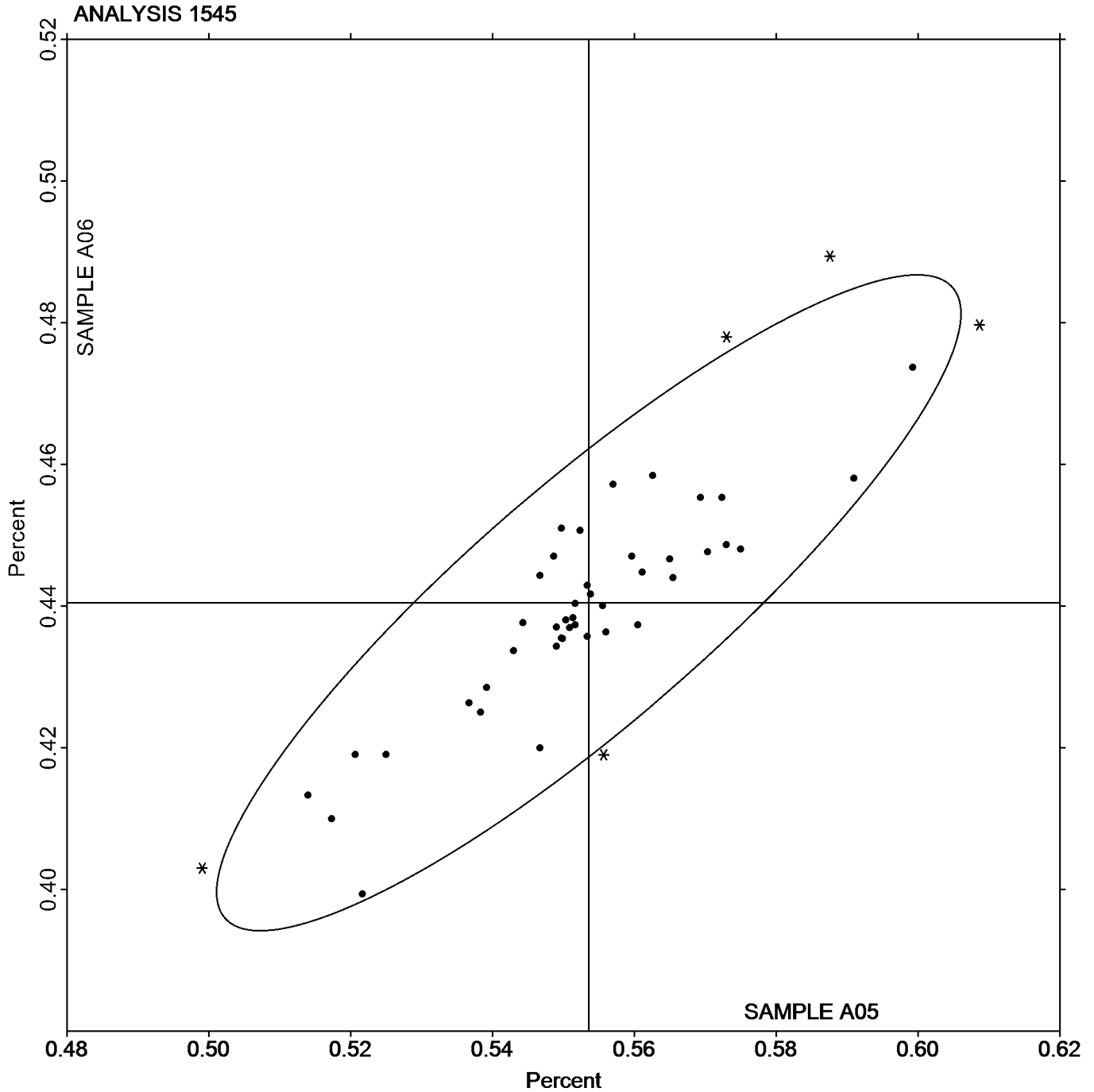
Analysis 1545

Aluminum, MAGNESIUM (Mg)

MAGNESIUM (Mg)

SAMPLE A05
0.5536 Percent

SAMPLE A06
0.4405 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1546

Aluminum, CHROMIUM (Cr)
CHROMIUM (Cr)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML		0.00430	0.00081	1.52	0.0102	0.00033	0.65	XX
2J7VCN		0.00297	-0.00052	-0.98	0.00967	-0.00021	-0.41	OE
2LWY3A		0.00297	-0.00052	-0.98	0.00920	-0.00067	-1.34	OE
2M4GYK	*	0.00217	-0.00132	-2.48	0.00830	-0.00157	-3.14	OE
464ZVY		0.00370	0.00021	0.39	0.0100	0.00016	0.32	OE
6E4VLG		0.00370	0.00021	0.39	0.0101	0.00019	0.39	OE
9LUEF9		0.00320	-0.00029	-0.54	0.00947	-0.00041	-0.81	DR
9P8KQ9		0.00397	0.00048	0.89	0.0100	0.00016	0.32	XX
9QPB3D		0.00300	-0.00049	-0.92	0.00900	-0.00087	-1.74	OE
AU2V76		0.00433	0.00084	1.58	0.00990	0.00003	0.05	XX
B36BLC	X	0.00100	-0.00249	-4.67	0.00627	-0.00361	-7.20	OE
B6BQYA		0.00333	-0.00016	-0.29	0.0103	0.00046	0.92	IC
BG6K3K		0.00330	-0.00019	-0.36	0.0105	0.00063	1.25	OE
C9QMZ6		0.00326	-0.00023	-0.43	0.00940	-0.00047	-0.94	XX
DA67LM	*	0.00520	0.00171	3.21	0.0110	0.00109	2.18	OE
FVYV8Z		0.00347	-0.00002	-0.04	0.00993	0.00006	0.12	IC
GAZU2G	X	0.00827	0.00478	8.96	0.0202	0.01033	20.61	IC
GUNDVZ		0.00400	0.00051	0.96	0.0100	0.00013	0.25	OE
H9XKZH		0.00340	-0.00009	-0.17	0.0100	0.00013	0.25	OE
HB2DRV	X	0.00733	0.00384	7.21	0.0150	0.00513	10.23	WD
HQDU2H	*	0.00317	-0.00032	-0.61	0.0110	0.00116	2.32	OE
HXP7UA		0.00330	-0.00019	-0.36	0.00987	-0.00001	-0.01	OE
JX8G43		0.00323	-0.00026	-0.48	0.00963	-0.00024	-0.48	OE
KABW3X		0.00360	0.00011	0.21	0.00997	0.00009	0.19	XX
L24PM3	X	0.0140	0.01051	19.71	0.00800	-0.00187	-3.74	XX
L9384Z		0.00333	-0.00016	-0.29	0.00963	-0.00024	-0.48	OE
LLNL8Z		0.00303	-0.00046	-0.86	0.00957	-0.00031	-0.61	OE
MYAFUD		0.00354	0.00005	0.09	0.00957	-0.00030	-0.61	OE
QF3KMQ		0.00400	0.00051	0.96	0.0100	0.00013	0.25	IC
RKQJHW		0.00300	-0.00049	-0.92	0.00967	-0.00021	-0.41	OE
RL9DJ8	X	0.0233	0.01984	37.21	0.0217	0.01179	23.54	OE
T9G4A7		0.00337	-0.00012	-0.23	0.00969	-0.00018	-0.36	OE
TH3A7B		0.00340	-0.00009	-0.17	0.00987	-0.00001	-0.01	OE
TL3FM2		0.00400	0.00051	0.96	0.0110	0.00113	2.25	GD
U42VJL		0.00330	-0.00019	-0.36	0.00967	-0.00021	-0.41	IC
UFBVV7		0.00343	-0.00006	-0.11	0.0105	0.00063	1.25	OE
W4Q4LL	M	No Data Reported			0.00640	-0.00347	-6.93	OE
WBRH3G		0.00324	-0.00025	-0.47	0.00963	-0.00024	-0.48	IC
XHNEQJ		0.00320	-0.00029	-0.54	0.00960	-0.00027	-0.54	OE
XNRD4U		0.00357	0.00008	0.16	0.0101	0.00019	0.38	OE
XR8J9X	M	No Data Reported			0.00810	-0.00177	-3.54	OE
Y6XZ4W		0.00303	-0.00046	-0.86	0.00987	-0.00001	-0.01	OE
YDJ2TY		0.00450	0.00101	1.89	0.0105	0.00063	1.25	OE
ZGKTPN		0.00323	-0.00026	-0.48	0.00970	-0.00017	-0.34	OE
ZPR26J		0.00357	0.00008	0.14	0.0103	0.00043	0.85	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1546 Aluminum, CHROMIUM (Cr) CHROMIUM (Cr)

Summary Statistics

	<u>Sample A05</u>		<u>Sample A06</u>	
Grand Means	0.00349	Percent	0.00987	Percent
Stnd Dev Btwn Labs	0.00053	Percent	0.00050	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 37 of 45 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1546

- B36BLC (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample A06.
- GAZU2G (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample A05.
- HB2DRV (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample A06.
- L24PM3 (X) - Data for sample A05 are high and data for sample A06 are low. Inconsistent in testing between samples. Inconsistent within the determinations of sample A05.
- RL9DJ8 (X) - Extreme data.
- W4Q4LL (M) - Participant did not submit data for sample A05.
- XR8J9X (M) - Participant did not submit data for sample A05.



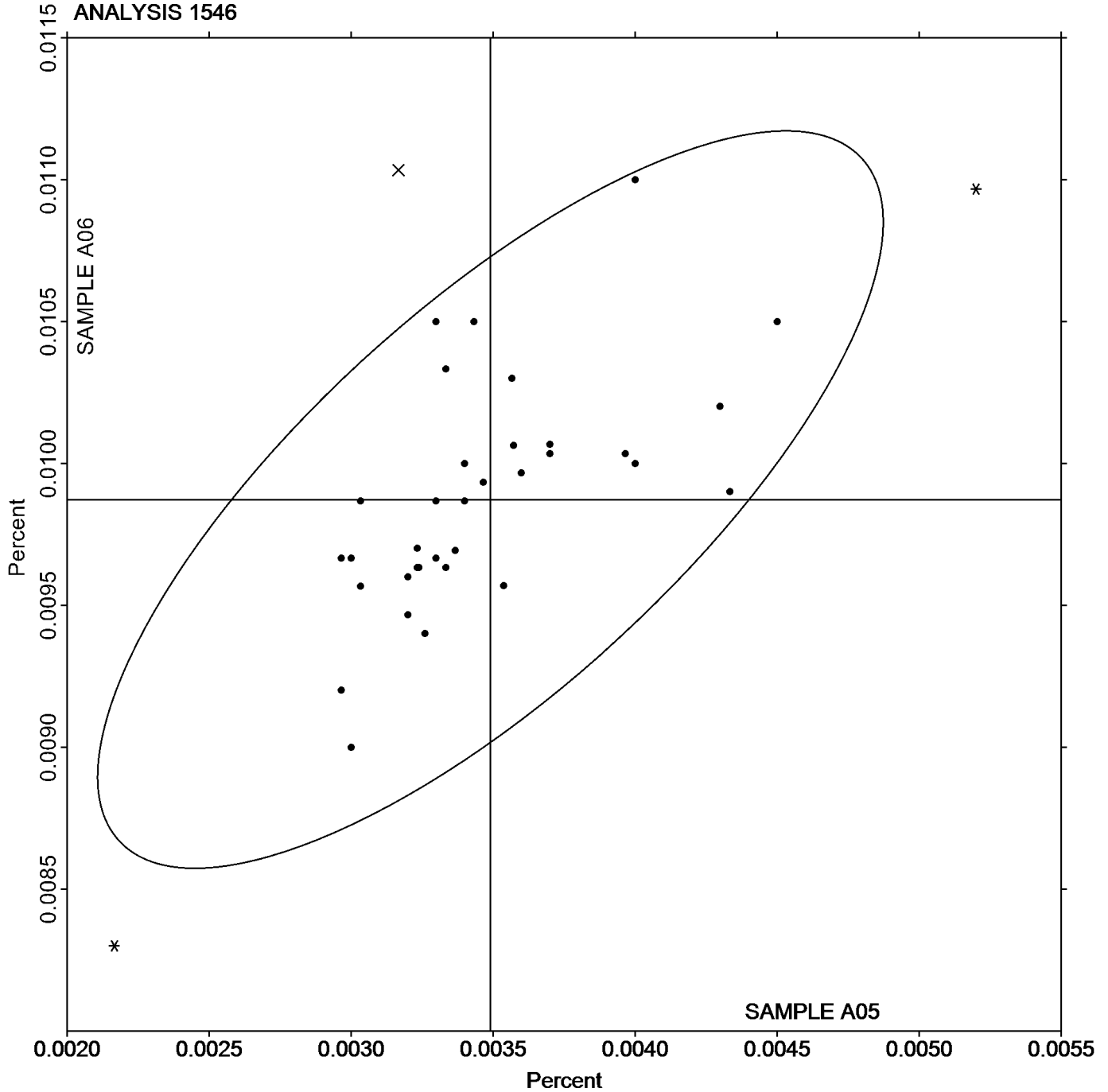
Analysis 1546

Aluminum, CHROMIUM (Cr)

CHROMIUM (Cr)

SAMPLE A05
0.00349 Percent

SAMPLE A06
0.00987 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1547

Aluminum, TITANIUM (Ti)
TITANIUM (Ti)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FXDML		0.0130	0.0017	1.70	0.0183	0.0015	1.62	XX
2J7VCN	X	0.00737	-0.0040	-4.05	0.0133	-0.0035	-3.91	OE
2LWY3A		0.0110	-0.0004	-0.37	0.0157	-0.0011	-1.26	OE
2M4GYK		0.0106	-0.0008	-0.81	0.0159	-0.0009	-0.96	OE
37Z2DJ		0.0113	0.0000	-0.03	0.0167	-0.0001	-0.15	GD
464ZVY		0.0112	-0.0001	-0.13	0.0167	-0.0001	-0.11	OE
6E4VLG		0.0124	0.0011	1.09	0.0172	0.0004	0.40	OE
9LUEF9		0.0117	0.0003	0.31	0.0174	0.0006	0.70	DR
9P8KQ9		0.0112	-0.0002	-0.16	0.0159	-0.0009	-1.04	XX
9QPB3D		0.0123	0.0010	0.99	0.0180	0.0012	1.33	OE
AU2V76		0.0113	-0.0001	-0.06	0.0166	-0.0002	-0.19	OE
B36BLC	*	0.0142	0.0028	2.84	0.0186	0.0018	2.03	OE
B6BQYA		0.0110	-0.0004	-0.37	0.0160	-0.0008	-0.89	IC
BG6K3K		0.0103	-0.0011	-1.08	0.0174	0.0006	0.66	OE
C9QMZ6		0.0109	-0.0005	-0.50	0.0161	-0.0007	-0.74	XX
DA67LM		0.0114	0.0000	0.01	0.0169	0.0001	0.07	OE
FVYV8Z		0.0108	-0.0006	-0.57	0.0166	-0.0002	-0.19	IC
GAZU2G		0.0136	0.0022	2.24	0.0180	0.0012	1.33	IC
GUNDVZ		0.0130	0.0016	1.66	0.0170	0.0002	0.22	OE
H9XKZH		0.0111	-0.0003	-0.26	0.0175	0.0007	0.77	OE
HB2DRV	X	0.00300	-0.0084	-8.48	0.0123	-0.0045	-4.95	WD
HQDU2H		0.0106	-0.0008	-0.81	0.0179	0.0011	1.25	XX
HXP7UA		0.0128	0.0014	1.46	0.0184	0.0016	1.77	OE
JX8G43		0.0110	-0.0003	-0.33	0.0165	-0.0003	-0.34	OE
KABW3X		0.0114	0.0000	0.01	0.0167	-0.0001	-0.08	XX
L24PM3		0.0117	0.0003	0.31	0.0170	0.0002	0.22	XX
L9384Z		0.0102	-0.0012	-1.18	0.0158	-0.0010	-1.15	OE
LLNL8Z		0.0119	0.0005	0.51	0.0175	0.0007	0.73	OE
LQL68D		0.0110	-0.0004	-0.37	0.0160	-0.0008	-0.89	IC
MYAFUD		0.00975	-0.0016	-1.63	0.0145	-0.0023	-2.54	OE
QF3KMQ	X	0.0100	-0.0014	-1.38	0.0200	0.0032	3.54	OE
RKQJHW		0.0120	0.0006	0.65	0.0180	0.0012	1.33	OE
T9G4A7		0.0112	-0.0002	-0.18	0.0165	-0.0003	-0.38	OE
TH3A7B		0.0116	0.0002	0.24	0.0169	0.0001	0.11	OE
TL3FM2		0.0110	-0.0004	-0.37	0.0170	0.0002	0.22	GD
U42VJL		0.0110	-0.0004	-0.40	0.0163	-0.0005	-0.59	IC
UFBVV7		0.00953	-0.0018	-1.85	0.0156	-0.0012	-1.29	OE
W4Q4LL		0.0107	-0.0006	-0.64	0.0159	-0.0009	-1.04	OE
WBRH3G		0.0106	-0.0007	-0.74	0.0158	-0.0010	-1.07	IC
XHNEQJ		0.0108	-0.0005	-0.54	0.0169	0.0001	0.14	OE
XNRD4U		0.0117	0.0003	0.34	0.0175	0.0007	0.72	OE
XR8J9X	M	No Data Reported			0.0141	-0.0027	-2.95	OE
Y6XZ4W		0.0113	0.0000	-0.03	0.0172	0.0004	0.44	OE
YDJ2TY		0.0119	0.0006	0.58	0.0169	0.0001	0.07	OE
YGHCPY		0.0115	0.0001	0.14	0.0171	0.0003	0.37	OE
YY33NY		0.00923	-0.0021	-2.16	0.0150	-0.0018	-1.96	OE
ZGKTPN		0.0118	0.0005	0.48	0.0171	0.0003	0.37	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1547

Aluminum, TITANIUM (Ti)
TITANIUM (Ti)

WebCode	Data Flag	Sample A05			Sample A06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
ZPR26J	X	0.1147	0.1033	104.73	0.0171	0.0003	0.33	OE

Summary Statistics

	Sample A05		Sample A06	
Grand Means	0.0114	Percent	0.0168	Percent
Std Dev Btrwn Labs	0.0010	Percent	0.0009	Percent

Samples A05, A06 : AA6060, AA6060

Statistics based on 43 of 48 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1547

- 2J7VCN (X) - Data for both samples are low. Possible Systematic Error.
- HB2DRV (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of both samples.
- QF3KMQ (X) - Data for sample A06 are high.
- XR8J9X (M) - Participant did not submit data for sample A05.
- ZPR26J (X) - Data for sample A05 are extreme.



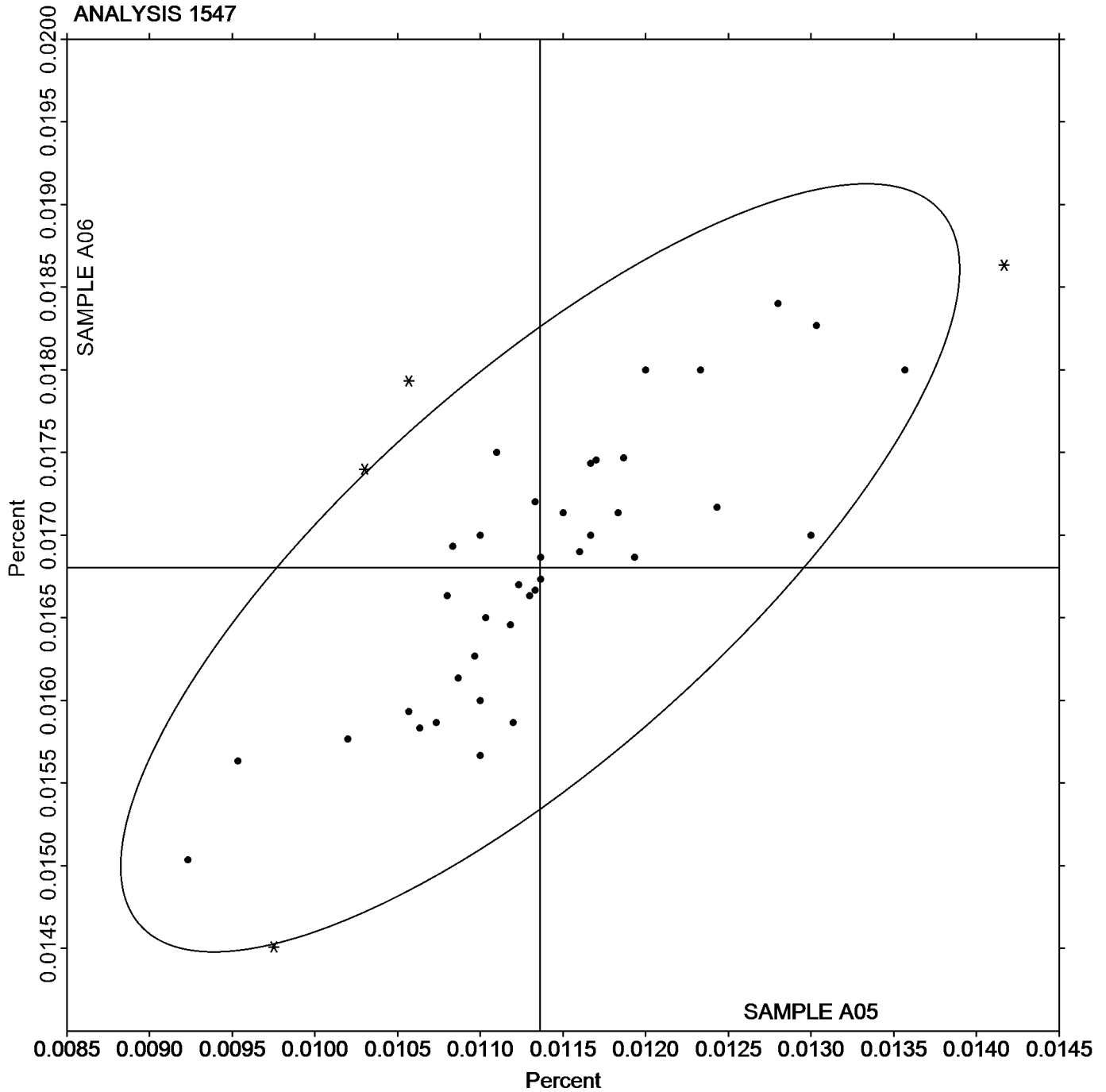
Analysis 1547

Aluminum, TITANIUM (Ti)

TITANIUM (Ti)

SAMPLE A05
0.0114 Percent

SAMPLE A06
0.0168 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1640

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		0.0643	-0.0028	-0.85	0.0440	-0.0030	-1.18	OE
2NKB4Z	X	0.0810	0.0139	4.25	0.0645	0.0175	6.84	CI
2QFUFR		0.0641	-0.0030	-0.91	0.0445	-0.0025	-0.97	OE
3QW9HV		0.0710	0.0039	1.19	0.0480	0.0010	0.39	OE
3TB6CL		0.0705	0.0034	1.05	0.0469	-0.0001	-0.05	DR
4ABC7D	*	0.0750	0.0079	2.42	0.0550	0.0080	3.13	GD
64M44Y		0.0703	0.0032	0.99	0.0503	0.0033	1.30	CI
74FJQF		0.0658	-0.0013	-0.40	0.0453	-0.0017	-0.68	CI
7ZH3AF		0.0657	-0.0014	-0.44	0.0463	-0.0007	-0.26	OE
8MLFJB		0.0688	0.0017	0.51	0.0486	0.0016	0.62	XX
8MMJ8P		0.0682	0.0011	0.32	0.0481	0.0011	0.44	OE
AMMYC		0.0690	0.0019	0.57	0.0469	-0.0001	-0.04	CO
AU2V76		0.0660	-0.0011	-0.34	0.0491	0.0021	0.82	CO
B6BQYA		0.0650	-0.0021	-0.64	0.0460	-0.0010	-0.39	OE
BBZ9DK		0.0667	-0.0004	-0.12	0.0489	0.0019	0.74	CO
BG6K3K		0.0670	-0.0001	-0.03	0.0454	-0.0016	-0.63	OE
CG77J4		0.0677	0.0006	0.17	0.0480	0.0010	0.39	CO
CK88LL		0.0619	-0.0052	-1.60	0.0433	-0.0037	-1.45	OE
E486XD	X	0.0542	-0.0129	-3.94	0.0390	-0.0080	-3.13	OE
E7P3Y4		0.0647	-0.0024	-0.75	0.0450	-0.0020	-0.78	OE
EGVEFC		0.0673	0.0002	0.07	0.0470	0.0000	0.00	OE
ER269F		0.0683	0.0012	0.36	0.0496	0.0026	1.03	CI
FFUAE4		0.0617	-0.0054	-1.65	0.0454	-0.0016	-0.63	OE
GDCY6B	*	0.0589	-0.0082	-2.51	0.0399	-0.0071	-2.79	OE
GJCFDW	*	0.0694	0.0023	0.71	0.0538	0.0068	2.66	OE
GUNDVZ		0.0680	0.0009	0.27	0.0470	0.0000	0.00	OE
J7KBKP	X	0.0490	-0.0181	-5.54	0.0380	-0.0090	-3.52	OE
KABW3X		0.0646	-0.0025	-0.78	0.0423	-0.0047	-1.83	XX
L9384Z		0.0674	0.0003	0.08	0.0484	0.0014	0.53	OE
LLNL8Z		0.0673	0.0002	0.07	0.0479	0.0009	0.35	OE
M7KAKU		0.0610	-0.0061	-1.87	0.0453	-0.0017	-0.65	OE
MQATC8		0.0670	-0.0001	-0.03	0.0479	0.0009	0.34	OE
MRMRV2		0.0660	-0.0011	-0.34	0.0473	0.0003	0.13	CO
MY9K82	X	0.0777	0.0106	3.23	0.0493	0.0023	0.91	OE
N33YB2		0.0723	0.0052	1.60	0.0480	0.0010	0.39	OE
NK6GL8		0.0654	-0.0017	-0.53	0.0459	-0.0011	-0.45	OE
NKMRXK		0.0690	0.0019	0.57	0.0468	-0.0002	-0.09	OE
Q2XUJR		0.0677	0.0006	0.17	0.0467	-0.0003	-0.13	CO
QF3KMQ		0.0680	0.0009	0.27	0.0500	0.0030	1.17	CI
QKHRCB		0.0703	0.0032	0.99	0.0495	0.0025	0.96	OE
QNBLJ7		0.0741	0.0070	2.15	0.0488	0.0018	0.69	GD
QXXLCW		0.0640	-0.0031	-0.95	0.0450	-0.0020	-0.78	OE
RKQJHW		0.0630	-0.0041	-1.26	0.0430	-0.0040	-1.57	OE
RMGNB4		0.0693	0.0022	0.68	0.0472	0.0002	0.06	OE
RY9EUM		0.0699	0.0028	0.86	0.0479	0.0009	0.36	CI
TE323Z		0.0723	0.0052	1.60	0.0499	0.0029	1.13	CI
UUUH3H		0.0654	-0.0017	-0.52	0.0469	-0.0001	-0.05	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1640

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UX2EKR		0.0680	0.0009	0.26	0.0486	0.0016	0.61	CI
VTWFYY		0.0700	0.0029	0.89	0.0500	0.0030	1.17	CI
WFM7NV		0.0678	0.0007	0.21	0.0481	0.0011	0.43	CO
WXLZX9		0.0637	-0.0034	-1.05	0.0450	-0.0020	-0.78	OE
XEBMNX		0.0700	0.0029	0.89	0.0500	0.0030	1.17	CI
XKBBWP		0.0687	0.0016	0.48	0.0487	0.0017	0.65	OE
XR8J9X	*	0.0600	-0.0071	-2.17	0.0397	-0.0073	-2.87	OE
Y6XZ4W		0.0655	-0.0016	-0.49	0.0470	0.0000	0.01	OE
YGHCPY		0.0658	-0.0013	-0.39	0.0477	0.0007	0.28	OE
YJW2K4		0.0662	-0.0009	-0.28	0.0460	-0.0010	-0.39	DR
YLXKFJ		0.0723	0.0052	1.60	0.0493	0.0023	0.91	OE
YME93B		0.0647	-0.0024	-0.75	0.0440	-0.0030	-1.18	OE
YYXLQZ		0.0667	-0.0004	-0.11	0.0474	0.0004	0.14	GD
ZPR26J		0.0685	0.0014	0.43	0.0478	0.0008	0.30	OE
ZQUX3E		0.0673	0.0002	0.07	0.0470	0.0000	0.00	CI

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.0671	Percent	0.0470	Percent
Stnd Dev Btwn Labs	0.0033	Percent	0.0026	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 57 of 62 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1640

2NKB4Z (X) - Data for both samples are high. Inconsistent within the determinations of sample M06.

E486XD (X) - Data for both samples are low.

J7KBKP (X) - Data for both samples are low. Inconsistent within the determinations of both samples.

MY9K82 (X) - Data for sample M05 are high.

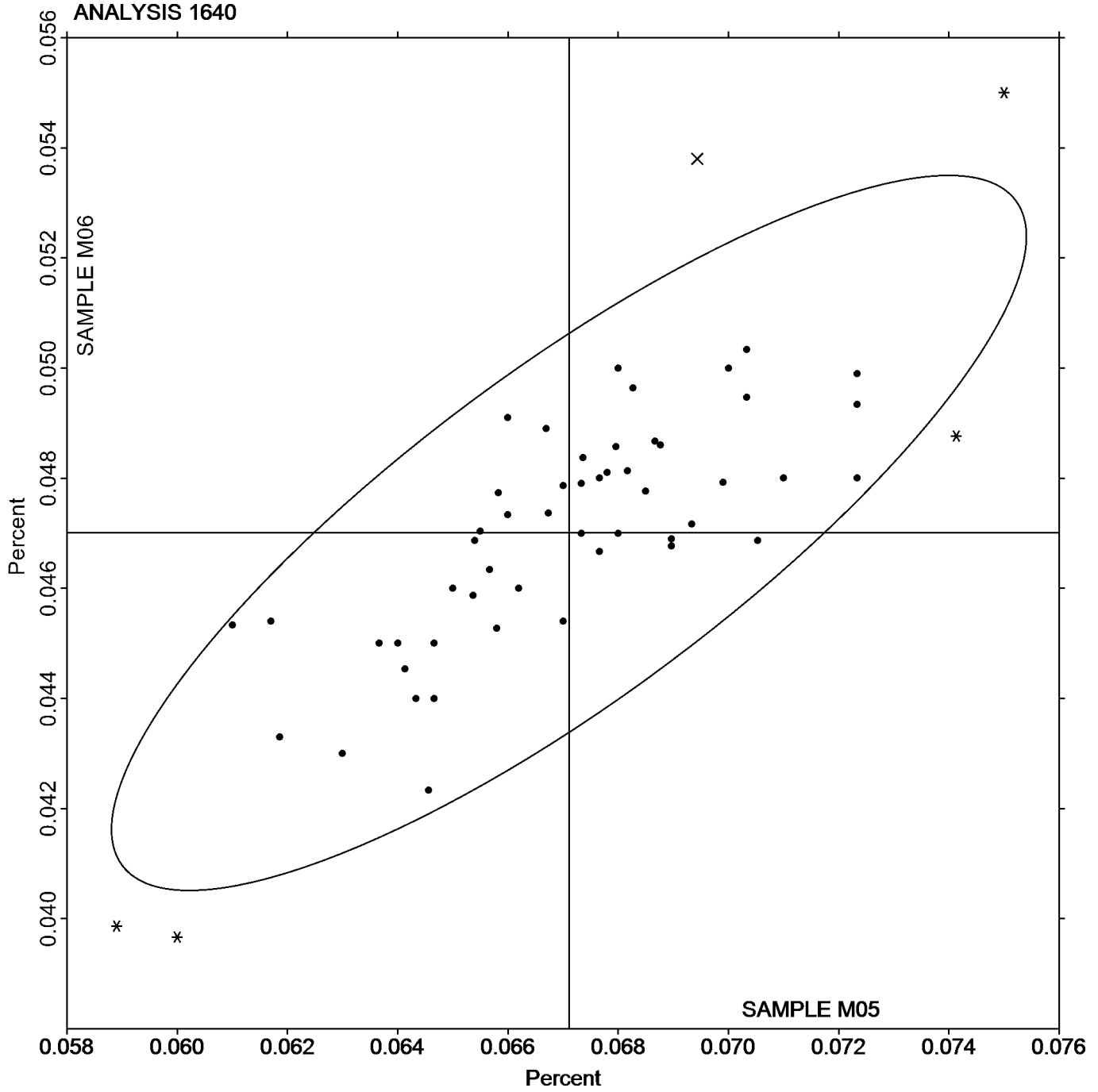


Analysis 1640

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

SAMPLE M05
0.0671 Percent

SAMPLE M06
0.0470 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1641

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		1.163	0.036	1.63	1.115	0.024	1.07	OE
2NKB4Z	X	1.117	-0.011	-0.48	1.110	0.019	0.84	IC
2QFUFR		1.134	0.006	0.29	1.107	0.016	0.71	OE
3QW9HV		1.074	-0.053	-2.41	1.032	-0.059	-2.59	OE
3TB6CL		1.153	0.026	1.19	1.117	0.026	1.13	DR
4ABC7D		1.140	0.013	0.58	1.120	0.029	1.28	GD
64M44Y		1.131	0.003	0.16	1.091	0.000	0.01	WD
74FJQF		1.110	-0.017	-0.77	1.074	-0.017	-0.75	XR
7ZH3AF		1.117	-0.011	-0.48	1.100	0.009	0.40	OE
8MLFJB		1.143	0.016	0.72	1.109	0.018	0.78	XX
8MMJ8P		1.147	0.019	0.89	1.110	0.019	0.84	OE
AFFG37	*	1.093	-0.035	-1.57	1.124	0.033	1.47	ED
AMMYC		1.110	-0.017	-0.78	1.070	-0.021	-0.91	XR
AU2V76		1.138	0.010	0.48	1.106	0.015	0.68	IC
B6BQYA		1.145	0.018	0.83	1.108	0.017	0.74	OE
BG6K3K		1.151	0.024	1.08	1.109	0.018	0.79	OE
CG77J4		1.130	0.003	0.13	1.100	0.009	0.40	OE
CK88LL		1.107	-0.021	-0.94	1.067	-0.024	-1.06	OE
E486XD		1.105	-0.023	-1.03	1.060	-0.031	-1.37	OE
E7P3Y4		1.120	-0.007	-0.31	1.081	-0.010	-0.45	OE
EGVEFC		1.074	-0.054	-2.44	1.041	-0.050	-2.20	OE
ER269F		1.136	0.008	0.39	1.097	0.006	0.28	WD
FFUAE4		1.098	-0.029	-1.33	1.068	-0.023	-1.02	OE
GDCY6B		1.140	0.013	0.58	1.087	-0.004	-0.18	OE
GJCFDW		1.158	0.031	1.40	1.122	0.031	1.36	OE
GUNDVZ		1.146	0.019	0.87	1.115	0.024	1.07	OE
J7KBKP		1.090	-0.037	-1.70	1.050	-0.041	-1.79	OE
KABW3X		1.173	0.046	2.10	1.133	0.042	1.86	XX
L9384Z		1.137	0.009	0.42	1.116	0.026	1.12	OE
LLNL8Z		1.127	-0.001	-0.02	1.087	-0.004	-0.18	OE
M7KAKU		1.116	-0.012	-0.53	1.092	0.001	0.05	OE
MQATC8		1.124	-0.003	-0.15	1.086	-0.005	-0.21	OE
MRMRV2		1.134	0.006	0.29	1.103	0.012	0.53	OE
MY9K82		1.090	-0.038	-1.71	1.072	-0.019	-0.83	OE
N33YB2		1.117	-0.011	-0.48	1.067	-0.024	-1.06	OE
NK6GL8		1.134	0.007	0.32	1.097	0.006	0.26	WD
NKMRXK		1.133	0.006	0.28	1.097	0.006	0.25	OE
Q2XUJR		1.136	0.009	0.42	1.111	0.020	0.87	DR
QF3KMQ		1.157	0.029	1.34	1.123	0.032	1.42	IC
QKHRCB		1.152	0.025	1.13	1.104	0.013	0.58	OE
QNBLJ7		1.130	0.003	0.13	1.107	0.016	0.69	GD
QXXLCW		1.075	-0.053	-2.39	1.046	-0.045	-1.95	OE
RKQJHW		1.123	-0.004	-0.18	1.073	-0.018	-0.77	OE
RMGNB4		1.126	-0.001	-0.04	1.090	-0.001	-0.04	WD
RY9EUM		1.141	0.014	0.64	1.103	0.012	0.53	WD
TE323Z		1.126	-0.001	-0.04	1.087	-0.004	-0.18	OE
UUUH3H		1.119	-0.008	-0.36	1.082	-0.009	-0.40	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1641

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UX2EKR		1.133	0.006	0.28	1.095	0.004	0.20	WD
VTWFYY		1.115	-0.012	-0.56	1.078	-0.013	-0.58	XR
WFM7NV		1.145	0.018	0.81	1.108	0.017	0.75	OE
WXLZX9		1.117	-0.011	-0.48	1.073	-0.018	-0.77	OE
XEBMNX		1.139	0.012	0.54	1.101	0.010	0.43	XR
XKBBWP	X	1.140	0.013	0.58	1.020	-0.071	-3.10	OE
XR8J9X		1.090	-0.037	-1.70	1.043	-0.048	-2.08	OE
Y6XZ4W	*	1.153	0.025	1.16	1.085	-0.006	-0.26	OE
YGHCPY		1.121	-0.007	-0.31	1.082	-0.009	-0.41	OE
YJW2K4		1.143	0.016	0.72	1.101	0.010	0.44	DR
YLXKFJ		1.123	-0.004	-0.18	1.080	-0.011	-0.48	OE
YME93B		1.137	0.009	0.43	1.110	0.019	0.84	OE
YYXLQZ		1.136	0.009	0.42	1.097	0.006	0.27	GD
ZPR26J		1.100	-0.027	-1.24	1.060	-0.031	-1.35	OE
ZQUX3E		1.150	0.023	1.05	1.113	0.022	0.97	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	1.127	Percent	1.091	Percent
Stnd Dev Btwn Labs	0.022	Percent	0.023	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 58 of 62 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1641

2NKB4Z (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample M06.

XKBBWP (X) - Data for sample M06 are low.



Analysis 1641

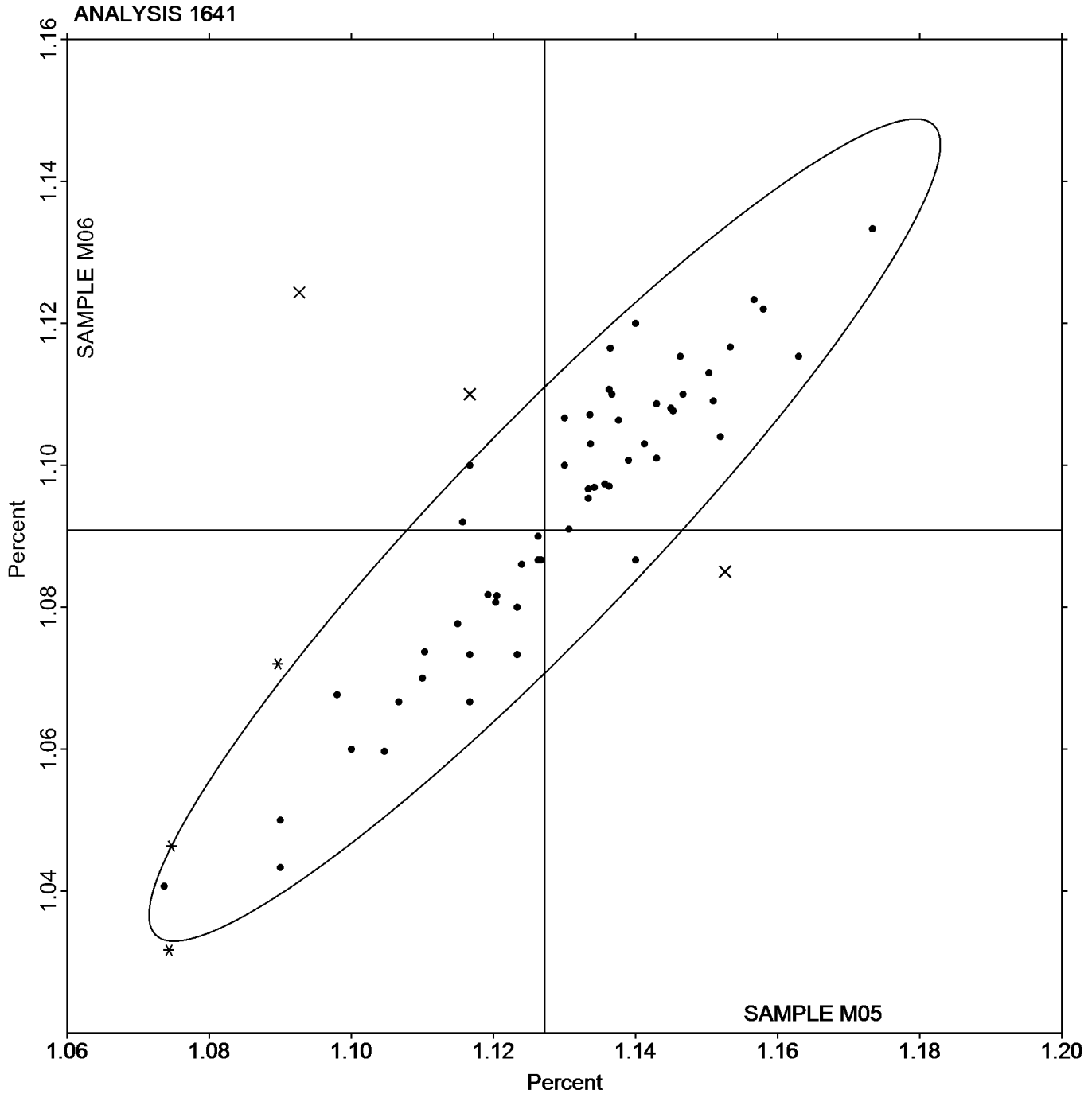
Corrosion Resistant Steel, MANGANESE (Mn)
MANGANESE (Mn)

SAMPLE M05

1.127 Percent

SAMPLE M06

1.091 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1642

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A	*	0.0197	-0.0051	-2.41	0.0180	-0.0062	-2.74	OE
2NKB4Z		0.0233	-0.0014	-0.68	0.0240	-0.0002	-0.10	IC
2QFUFR		0.0254	0.0007	0.32	0.0248	0.0005	0.23	OE
3QW9HV		0.0277	0.0029	1.37	0.0270	0.0028	1.22	OE
3TB6CL		0.0255	0.0007	0.35	0.0244	0.0002	0.09	DR
4ABC7D		0.0215	-0.0033	-1.54	0.0207	-0.0035	-1.55	GD
64M44Y		0.0193	-0.0054	-2.57	0.0190	-0.0052	-2.30	WD
74FJQF		0.0240	-0.0008	-0.36	0.0230	-0.0012	-0.54	XR
7ZH3AF	X	0.0320	0.0072	3.43	0.0293	0.0051	2.24	OE
8MLFJB		0.0261	0.0013	0.62	0.0267	0.0024	1.07	XX
8MMJ8P		0.0245	-0.0003	-0.12	0.0233	-0.0009	-0.41	OE
AFFG37		0.0250	0.0002	0.11	0.0250	0.0008	0.34	ED
AMMYC		0.0220	-0.0028	-1.31	0.0220	-0.0022	-0.98	XR
AU2V76		0.0256	0.0009	0.41	0.0255	0.0012	0.54	IC
B6BQYA		0.0247	-0.0001	-0.05	0.0237	-0.0006	-0.25	OE
BG6K3K		0.0243	-0.0005	-0.22	0.0238	-0.0004	-0.19	OE
CG77J4		0.0270	0.0022	1.06	0.0270	0.0028	1.22	OE
CK88LL		0.0224	-0.0023	-1.10	0.0201	-0.0041	-1.80	OE
E486XD		0.0281	0.0033	1.58	0.0274	0.0032	1.39	OE
E7P3Y4		0.0237	-0.0011	-0.52	0.0230	-0.0012	-0.54	OE
EGVEFC		0.0300	0.0052	2.48	0.0290	0.0048	2.09	OE
ER269F		0.0237	-0.0011	-0.50	0.0232	-0.0010	-0.45	WD
FFUAE4		0.0266	0.0019	0.89	0.0265	0.0022	0.98	OE
GDCY6B		0.0273	0.0026	1.22	0.0260	0.0018	0.79	OE
GJCFDW		0.0296	0.0048	2.29	0.0289	0.0046	2.04	OE
GUNDVZ		0.0250	0.0002	0.11	0.0240	-0.0002	-0.10	OE
J7KBKP	X	0.0337	0.0089	4.22	0.0417	0.0174	7.66	OE
KABW3X		0.0252	0.0004	0.19	0.0237	-0.0005	-0.22	XX
L9384Z		0.0219	-0.0028	-1.34	0.0213	-0.0030	-1.30	OE
LLNL8Z		0.0247	-0.0001	-0.05	0.0238	-0.0004	-0.18	OE
M7KAKU		0.0252	0.0004	0.19	0.0258	0.0015	0.67	OE
MQATC8		0.0248	0.0001	0.03	0.0244	0.0002	0.09	OE
MRMRV2		0.0267	0.0019	0.90	0.0267	0.0024	1.07	OE
MY9K82		0.0249	0.0001	0.05	0.0263	0.0020	0.89	OE
N33YB2		0.0253	0.0006	0.27	0.0223	-0.0019	-0.83	OE
NK6GL8		0.0242	-0.0006	-0.28	0.0239	-0.0003	-0.13	WD
NKMRXK		0.0249	0.0002	0.08	0.0245	0.0003	0.13	OE
Q2XUJR		0.0246	-0.0002	-0.08	0.0239	-0.0003	-0.15	DR
QF3KMQ		0.0260	0.0012	0.59	0.0260	0.0018	0.78	IC
QKHRCB		0.0257	0.0010	0.46	0.0245	0.0002	0.10	OE
QNBLJ7		0.0269	0.0021	1.01	0.0249	0.0007	0.29	GD
QXXLCW	X	0.0330	0.0082	3.90	0.0290	0.0048	2.09	OE
RKQJHW		0.0227	-0.0021	-0.99	0.0217	-0.0026	-1.13	OE
RMGNB4		0.0249	0.0001	0.05	0.0245	0.0003	0.12	WD
RY9EUM		0.0249	0.0001	0.06	0.0247	0.0005	0.22	WD
TE323Z		0.0243	-0.0004	-0.20	0.0236	-0.0006	-0.26	OE
UUUH3H		0.0242	-0.0005	-0.25	0.0239	-0.0004	-0.16	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1642

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UX2EKR		0.0247	-0.0001	-0.05	0.0242	0.0000	0.00	WD
VTWFYY		0.0255	0.0008	0.36	0.0247	0.0005	0.21	XR
WFM7NV		0.0236	-0.0012	-0.55	0.0227	-0.0015	-0.67	OE
WXLZX9		0.0253	0.0005	0.24	0.0243	0.0001	0.03	OE
XEBMNX		0.0247	-0.0001	-0.05	0.0239	-0.0004	-0.16	XR
XKBBWP		0.0260	0.0012	0.59	0.0280	0.0038	1.66	OE
XR8J9X		0.0232	-0.0016	-0.74	0.0231	-0.0011	-0.48	OE
Y6XZ4W		0.0253	0.0006	0.27	0.0271	0.0029	1.26	OE
YGHCPY		0.0243	-0.0004	-0.20	0.0237	-0.0006	-0.25	OE
YLXKFJ		0.0230	-0.0018	-0.83	0.0220	-0.0022	-0.98	OE
YME93B		0.0290	0.0043	2.02	0.0279	0.0037	1.61	OE
YYXLQZ		0.0199	-0.0049	-2.32	0.0197	-0.0046	-2.01	GD
ZPR26J		0.0227	-0.0020	-0.96	0.0236	-0.0006	-0.28	OE
ZQUX3E		0.0250	0.0002	0.11	0.0243	0.0001	0.04	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.0248	Percent	0.0242	Percent
Std Dev Btwn Labs	0.0021	Percent	0.0023	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 58 of 61 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1642

7ZH3AF (X) - Data for sample M05 are high. Inconsistent within the determinations of sample M06.

J7KBKP (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M06.

QXXLCW (X) - Data for sample M05 are high.

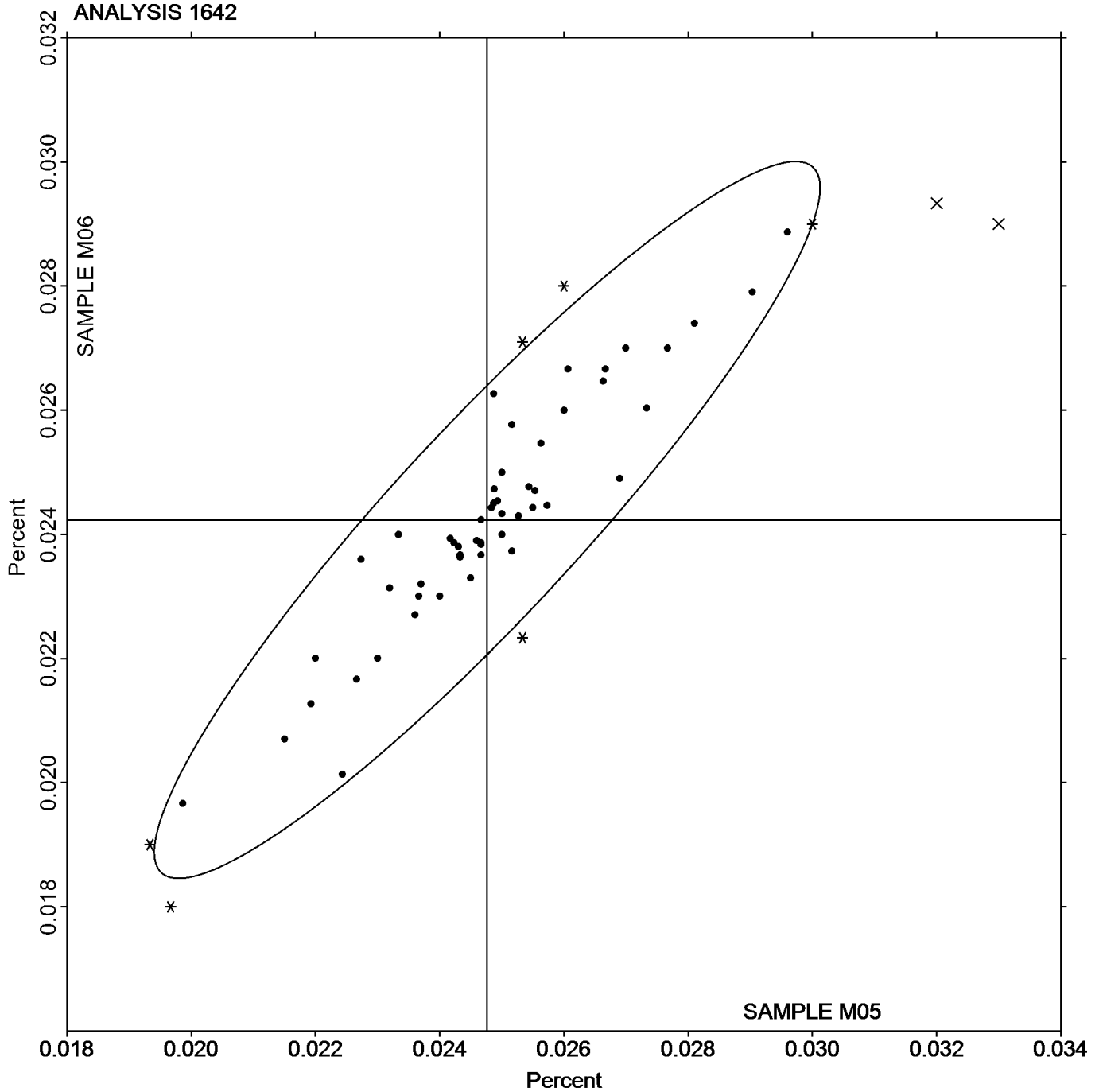


Analysis 1642

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

SAMPLE M05
0.0248 Percent

SAMPLE M06
0.0242 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1643

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		0.00213	0.00020	0.19	0.00110	-0.00020	-0.20	OE
2NKB4Z	X	0.0355	0.03357	30.98	0.0295	0.02820	27.59	CI
3TB6CL		0.00233	0.00040	0.37	0.00183	0.00053	0.52	DR
4ABC7D		0.00190	-0.00003	-0.03	0.00120	-0.00010	-0.10	GD
64M44Y		0.00160	-0.00033	-0.30	0.000800	-0.00050	-0.49	CI
7ZH3AF	M	0.00100	-0.00093	-0.86	No Data Reported			OE
8MLFJB		0.00110	-0.00083	-0.77	0.000200	-0.00110	-1.08	XX
8MMJ8P		0.00247	0.00054	0.49	0.00203	0.00073	0.72	OE
979U9E		0.00213	0.00020	0.19	0.00130	0.00000	0.00	CI
B6BQYA		0.00100	-0.00093	-0.86	0.00100	-0.00030	-0.29	OE
BG6K3K		0.00160	-0.00033	-0.30	0.00100	-0.00030	-0.29	OE
CG77J4		0.00200	0.00007	0.06	0.00200	0.00070	0.69	CO
CK88LL	*	0.00517	0.00324	2.99	0.00390	0.00260	2.54	OE
E486XD		0.00319	0.00126	1.16	0.00218	0.00088	0.86	OE
E7P3Y4	*	0.00267	0.00074	0.68	0.00300	0.00170	1.66	OE
EGVEFC		0.00100	-0.00093	-0.86	0.00100	-0.00030	-0.29	OE
ER269F		0.00117	-0.00076	-0.70	0.000267	-0.00103	-1.01	CI
FFUAE4	X	0.00630	0.00437	4.03	0.00567	0.00437	4.27	OE
GDCY6B		0.00177	-0.00016	-0.15	0.00153	0.00023	0.23	OE
GJCFDW		0.00290	0.00097	0.89	0.00210	0.00080	0.78	OE
GUNDVZ	*	0.00400	0.00207	1.91	0.00100	-0.00030	-0.29	OE
J7KBKP	X	0.0120	0.01007	9.29	0.0310	0.02970	29.05	OE
KABW3X		0.00450	0.00257	2.37	0.00350	0.00220	2.15	XX
L9384Z		0.00323	0.00130	1.20	0.00243	0.00113	1.11	OE
LLNL8Z		0.000500	-0.00143	-1.32	0.000500	-0.00080	-0.78	XX
M7KAKU		0.00407	0.00214	1.97	0.00340	0.00210	2.05	OE
MQATC8		0.00287	0.00094	0.86	0.00200	0.00070	0.69	OE
MRMRV2	M	0.000867	-0.00106	-0.98	No Data Reported			CO
MY9K82		0.00253	0.00060	0.56	0.00197	0.00067	0.65	OE
N33YB2		0.00200	0.00007	0.06	0.000500	-0.00080	-0.78	OE
NK6GL8		0.000900	-0.00103	-0.95	0.000100	-0.00120	-1.17	OE
Q2XUJR		0.00157	-0.00036	-0.34	0.000767	-0.00053	-0.52	CO
QF3KMQ		0.00100	-0.00093	-0.86	0.000300	-0.00100	-0.98	CI
QKHRCB		0.00170	-0.00023	-0.21	0.000967	-0.00033	-0.33	OE
QXXLCW	X	0.0200	0.01807	16.68	0.0210	0.01970	19.27	OE
RKQJHW		0.00367	0.00174	1.60	0.00300	0.00170	1.66	OE
RMGNB4		0.00237	0.00044	0.40	0.00160	0.00030	0.29	WD
RY9EUM		0.000900	-0.00103	-0.95	0.000163	-0.00114	-1.11	CI
TE323Z		0.00125	-0.00068	-0.62	0.000533	-0.00077	-0.75	CI
UX2EKR		0.00110	-0.00083	-0.77	0.000233	-0.00107	-1.04	CI
VTWFYY		0.00130	-0.00063	-0.58	0.000500	-0.00080	-0.78	CI
WFM7NV		0.000500	-0.00143	-1.32	0.000100	-0.00120	-1.17	CO
WXLZX9	X	0.00720	0.00527	4.86	0.00650	0.00520	5.09	OE
XEBMNX		0.00130	-0.00063	-0.58	0.000500	-0.00080	-0.78	CI
XKBBWP		0.00133	-0.00060	-0.55	0.00133	0.00003	0.03	OE
Y6XZ4W		0.00103	-0.00090	-0.83	0.000700	-0.00060	-0.59	OE
YGHCPY		0.00130	-0.00063	-0.58	0.000500	-0.00080	-0.78	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1643

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
YLXKFJ		0.00100	-0.00093	-0.86	0.00100	-0.00030	-0.29	OE
YME93B	X	0.0169	0.01500	13.85	0.0152	0.01393	13.63	OE
ZQUX3E		0.00110	-0.00083	-0.77	0.000233	-0.00107	-1.04	CI

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.00193	Percent	0.00130	Percent
Std Dev Btwn Labs	0.00108	Percent	0.00102	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 41 of 50 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1643

- 2NKB4Z (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- 7ZH3AF (M) - Participant did not submit data for sample M06.
- FFUAE4 (X) - Data for both samples are high. Possible Systematic Error.
- J7KBKP (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- MRMRV2 (M) - Participant did not submit data for sample M06.
- QXXLCW (X) - Data for both samples are high. Possible Systematic Error.
- WXLZX9 (X) - Data for both samples are high. Possible Systematic Error.
- YME93B (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M06.



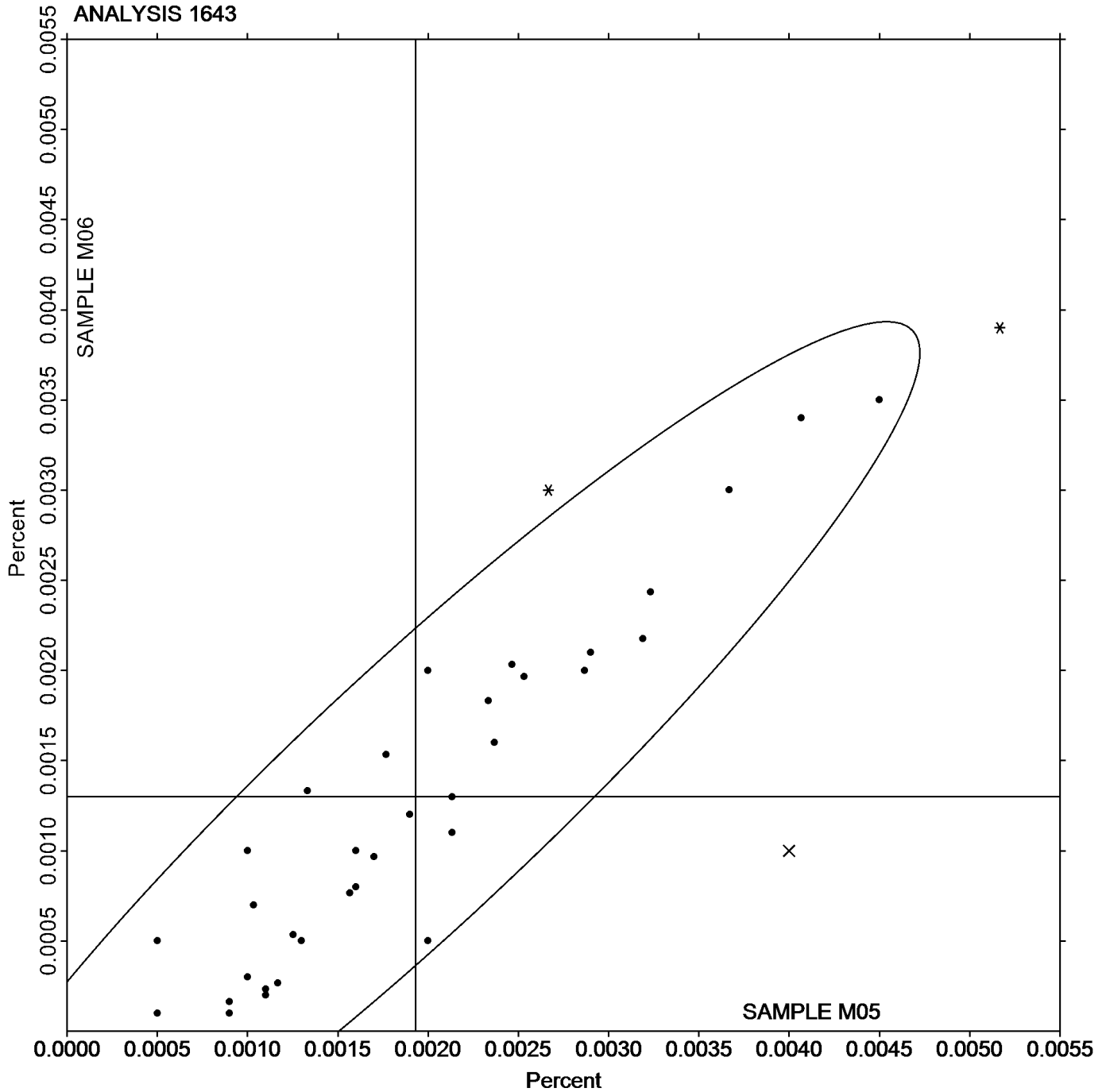
Analysis 1643

Corrosion Resistant Steel, SULFUR (S)

SULFUR (S)

SAMPLE M05
0.00193 Percent

SAMPLE M06
0.00130 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1644

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		0.4727	-0.0052	-0.47	0.3970	-0.0144	-1.37	OE
2NKB4Z	X	0.3910	-0.0869	-7.86	0.3783	-0.0330	-3.16	IC
2QFUFR		0.4745	-0.0034	-0.31	0.4144	0.0030	0.29	OE
3QW9HV		0.5033	0.0255	2.30	0.4310	0.0196	1.88	OE
3TB6CL		0.4853	0.0075	0.68	0.4217	0.0103	0.99	DR
4ABC7D		0.4760	-0.0019	-0.17	0.4050	-0.0064	-0.61	GD
64M44Y	X	0.4340	-0.0439	-3.97	0.3683	-0.0430	-4.12	WD
74FJQF		0.4843	0.0065	0.58	0.4173	0.0060	0.57	XR
7ZH3AF		0.4800	0.0021	0.19	0.4100	-0.0014	-0.13	OE
8MLFJB		0.4723	-0.0055	-0.50	0.4137	0.0023	0.22	XX
8MMJ8P		0.4713	-0.0065	-0.59	0.4000	-0.0114	-1.09	OE
AFFG37	X	0.4013	-0.0765	-6.92	0.4710	0.0596	5.71	ED
AMMYC		0.4800	0.0021	0.19	0.4100	-0.0014	-0.13	XR
AU2V76		0.4803	0.0025	0.22	0.4187	0.0073	0.70	IC
B6BQYA		0.4833	0.0055	0.49	0.4177	0.0063	0.60	OE
BG6K3K		0.4740	-0.0039	-0.35	0.4110	-0.0004	-0.04	OE
CG77J4		0.4970	0.0191	1.73	0.4280	0.0166	1.59	OE
CK88LL	X	0.4273	-0.0505	-4.57	0.3670	-0.0444	-4.25	OE
E486XD	*	0.4557	-0.0222	-2.00	0.4270	0.0156	1.49	OE
E7P3Y4		0.4927	0.0148	1.34	0.4373	0.0260	2.48	OE
EGVEFC	X	0.6537	0.1758	15.90	0.5627	0.1513	14.48	OE
ER269F		0.4787	0.0008	0.07	0.4107	-0.0007	-0.07	WD
FFUAE4		0.4607	-0.0172	-1.56	0.3957	-0.0157	-1.50	OE
GDCY6B		0.4830	0.0051	0.46	0.4080	-0.0034	-0.32	OE
GJCFDW		0.4920	0.0141	1.28	0.4323	0.0210	2.01	OE
GUNDVZ		0.4790	0.0011	0.10	0.4170	0.0056	0.54	OE
J7KBKP	X	0.4503	-0.0275	-2.49	0.3660	-0.0454	-4.34	OE
KABW3X		0.4840	0.0061	0.55	0.4170	0.0056	0.54	XX
L9384Z		0.4825	0.0046	0.42	0.4146	0.0032	0.31	OE
LLNL8Z		0.4717	-0.0062	-0.56	0.4090	-0.0024	-0.23	OE
M7KAKU		0.4740	-0.0039	-0.35	0.4130	0.0016	0.16	OE
MQATC8		0.4903	0.0125	1.13	0.4243	0.0130	1.24	OE
MRMRV2	*	0.4437	-0.0342	-3.09	0.3857	-0.0257	-2.46	OE
MY9K82		0.4767	-0.0012	-0.11	0.4010	-0.0104	-0.99	OE
N33YB2		0.4733	-0.0045	-0.41	0.4070	-0.0044	-0.42	OE
NK6GL8		0.4650	-0.0128	-1.16	0.4054	-0.0060	-0.57	WD
NKMRXK		0.4710	-0.0069	-0.62	0.4017	-0.0097	-0.93	OE
Q2XUJR		0.4750	-0.0029	-0.26	0.4043	-0.0071	-0.68	DR
QF3KMQ		0.4733	-0.0045	-0.41	0.4167	0.0053	0.51	IC
QKHRCB		0.4873	0.0095	0.86	0.4077	-0.0037	-0.35	OE
QNBLJ7		0.4807	0.0028	0.25	0.4187	0.0073	0.70	GD
QXXLCW	*	0.4607	-0.0172	-1.56	0.4373	0.0260	2.48	OE
RKQJHW		0.4867	0.0088	0.80	0.4200	0.0086	0.83	OE
RMGNB4		0.4847	0.0068	0.62	0.4140	0.0026	0.25	OE
RY9EUM		0.4718	-0.0061	-0.55	0.4077	-0.0036	-0.35	WD
TE323Z		0.4813	0.0035	0.31	0.4127	0.0013	0.12	OE
UX2EKR		0.4820	0.0041	0.37	0.4133	0.0020	0.19	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1644

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VTWFYY		0.4643	-0.0135	-1.22	0.4003	-0.0110	-1.06	XR
WFM7NV		0.5070	0.0291	2.63	0.4360	0.0246	2.36	OE
WXLZX9		0.4787	0.0008	0.07	0.4050	-0.0064	-0.61	OE
XEBMNX		0.4613	-0.0165	-1.50	0.3963	-0.0150	-1.44	XR
XKBBWP		0.4733	-0.0045	-0.41	0.4100	-0.0014	-0.13	OE
XR8J9X		0.4810	0.0031	0.28	0.4090	-0.0024	-0.23	OE
Y6XZ4W		0.4860	0.0082	0.74	0.4186	0.0073	0.70	OE
YGHCPY		0.4716	-0.0063	-0.57	0.4103	-0.0011	-0.11	OE
YJW2K4		0.4829	0.0050	0.45	0.4096	-0.0017	-0.17	DR
YLXKFJ		0.4747	-0.0032	-0.29	0.4067	-0.0047	-0.45	OE
YME93B		0.4500	-0.0279	-2.52	0.3900	-0.0214	-2.04	OE
YYXLQZ		0.4717	-0.0062	-0.56	0.4080	-0.0034	-0.32	GD
ZPR26J		0.4780	0.0001	0.01	0.4073	-0.0040	-0.39	OE
ZQUX3E		0.4710	-0.0069	-0.62	0.4053	-0.0060	-0.58	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.4779	Percent	0.4114	Percent
Std Dev Btwn Labs	0.0111	Percent	0.0105	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 53 of 61 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1644

- 2NKB4Z (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample M06.
- 64M44Y (X) - Data for both samples are low. Possible Systematic Error.
- AFFG37 (X) - Data appear to be transposed between samples.
- CK88LL (X) - Data for both samples are low. Possible Systematic Error.
- EGVEFC (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M06.
- J7KBKP (X) - Data for sample M06 are low.



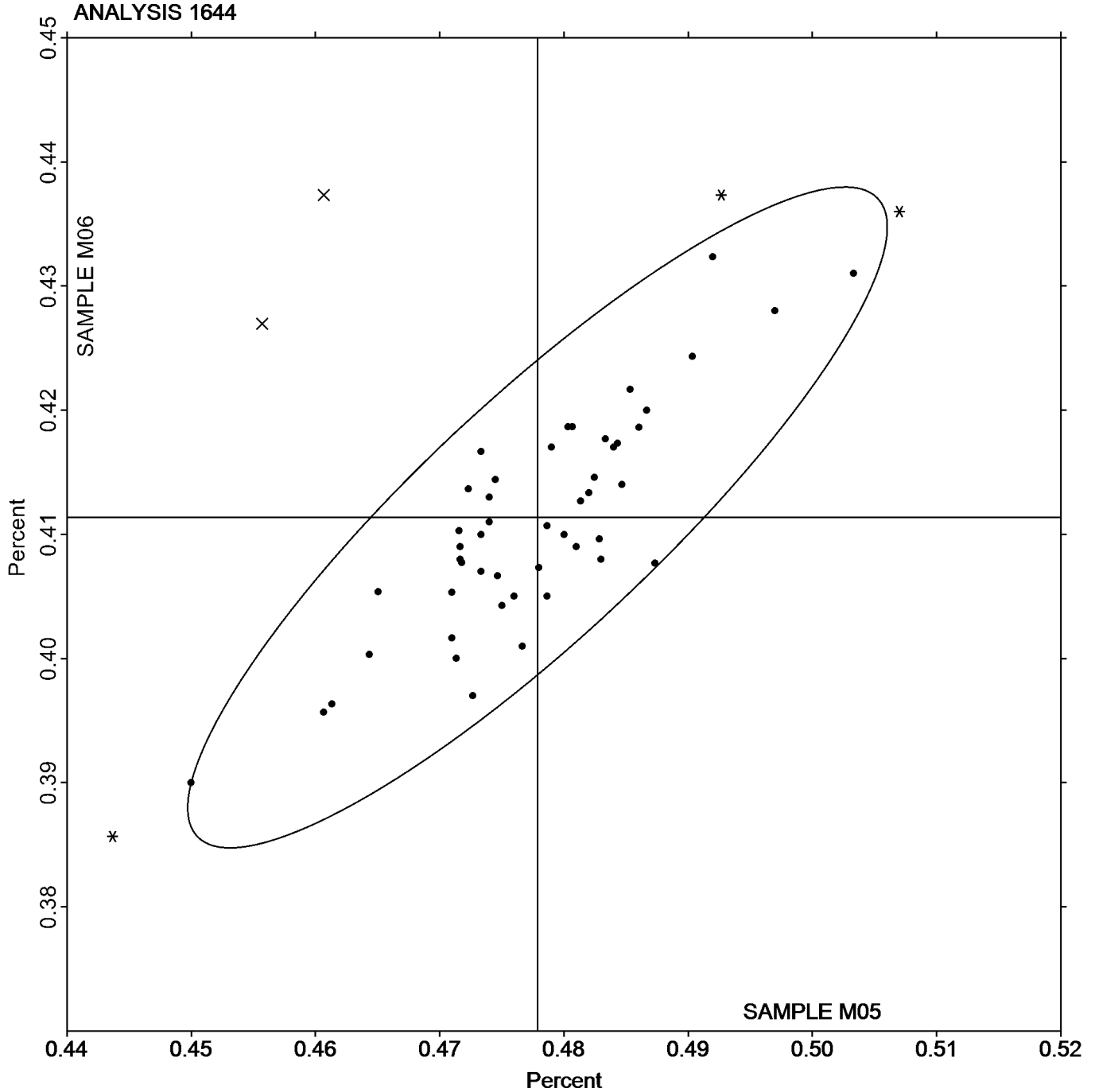
Analysis 1644

Corrosion Resistant Steel, SILICON (Si)

SILICON (Si)

SAMPLE M05
0.4779 Percent

SAMPLE M06
0.4114 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1645

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		0.1660	-0.0025	-0.49	0.1390	-0.0031	-0.65	OE
2NKB4Z		0.1747	0.0062	1.22	0.1507	0.0086	1.82	IC
2QFUFR		0.1672	-0.0013	-0.25	0.1412	-0.0009	-0.18	OE
3QW9HV		0.1700	0.0015	0.30	0.1433	0.0012	0.26	OE
3TB6CL		0.1723	0.0038	0.76	0.1450	0.0029	0.62	DR
4ABC7D		0.1690	0.0005	0.10	0.1440	0.0019	0.40	GD
64M44Y		0.1670	-0.0015	-0.30	0.1407	-0.0014	-0.30	WD
74FJQF		0.1707	0.0022	0.43	0.1427	0.0006	0.12	XR
7ZH3AF		0.1600	-0.0085	-1.68	0.1300	-0.0121	-2.56	OE
8MLFJB	*	0.1827	0.0142	2.80	0.1527	0.0106	2.24	AA
8MMJ8P		0.1747	0.0062	1.22	0.1520	0.0099	2.10	OE
979U9E		0.1633	-0.0052	-1.02	0.1387	-0.0034	-0.72	XX
AFFG37	X	0.1433	-0.0252	-4.97	0.1710	0.0289	6.12	ED
AMMYC		0.1600	-0.0085	-1.68	0.1400	-0.0021	-0.44	XR
AU2V76		0.1727	0.0042	0.82	0.1443	0.0022	0.47	IC
B6BQYA		0.1670	-0.0015	-0.30	0.1413	-0.0008	-0.16	OE
BG6K3K		0.1740	0.0055	1.09	0.1480	0.0059	1.25	OE
CG77J4		0.1680	-0.0005	-0.10	0.1420	-0.0001	-0.02	OE
CK88LL		0.1683	-0.0002	-0.03	0.1380	-0.0041	-0.87	OE
E486XD	*	0.1582	-0.0103	-2.04	0.1427	0.0006	0.12	OE
EGVEFC		0.1720	0.0035	0.69	0.1467	0.0046	0.97	OE
ER269F		0.1582	-0.0103	-2.03	0.1329	-0.0092	-1.94	WD
GDCY6B		0.1720	0.0035	0.69	0.1433	0.0012	0.26	OE
GJCFDW		0.1747	0.0062	1.22	0.1470	0.0049	1.04	OE
GUNDVZ		0.1683	-0.0002	-0.03	0.1410	-0.0011	-0.23	OE
J7KBKP		0.1587	-0.0098	-1.94	0.1307	-0.0114	-2.42	XX
KABW3X		0.1710	0.0025	0.49	0.1427	0.0006	0.12	XX
L9384Z		0.1677	-0.0008	-0.15	0.1408	-0.0013	-0.27	OE
LLNL8Z		0.1720	0.0035	0.69	0.1437	0.0016	0.33	OE
M7KAKU		0.1657	-0.0028	-0.56	0.1393	-0.0028	-0.58	OE
MQATC8		0.1720	0.0035	0.69	0.1450	0.0029	0.62	OE
MRMRV2		0.1697	0.0012	0.23	0.1440	0.0019	0.40	OE
N33YB2		0.1677	-0.0008	-0.16	0.1387	-0.0034	-0.72	OE
NK6GL8		0.1657	-0.0028	-0.55	0.1397	-0.0024	-0.50	WD
NKMRXK		0.1680	-0.0005	-0.10	0.1437	0.0016	0.33	OE
Q2XUJR		0.1671	-0.0014	-0.27	0.1405	-0.0016	-0.34	DR
QF3KMQ		0.1800	0.0115	2.27	0.1500	0.0079	1.67	IC
QKHRCB		0.1613	-0.0072	-1.41	0.1357	-0.0064	-1.36	OE
QNBLJ7		0.1723	0.0038	0.76	0.1477	0.0056	1.18	GD
QXXLCW	X	0.1547	-0.0138	-2.73	0.1403	-0.0018	-0.37	OE
RKQJHW		0.1600	-0.0085	-1.68	0.1333	-0.0088	-1.85	OE
RMGNB4		0.1680	-0.0005	-0.10	0.1413	-0.0008	-0.16	WD
RY9EUM		0.1702	0.0017	0.34	0.1424	0.0003	0.06	WD
TE323Z		0.1643	-0.0042	-0.82	0.1413	-0.0008	-0.16	OE
UUUH3H		0.1707	0.0022	0.43	0.1437	0.0016	0.33	WD
UX2EKR		0.1753	0.0068	1.35	0.1430	0.0009	0.19	WD
VTWFYY		0.1680	-0.0005	-0.10	0.1420	-0.0001	-0.02	XR



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1645

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WFM7NV		0.1650	-0.0035	-0.69	0.1380	-0.0041	-0.87	OE
WXLZX9	X	0.1310	-0.0375	-7.40	0.1117	-0.0304	-6.44	OE
XEBMNX		0.1673	-0.0012	-0.23	0.1410	-0.0011	-0.23	XR
XKBBWP		0.1733	0.0048	0.95	0.1500	0.0079	1.67	OE
XR8J9X		0.1710	0.0025	0.49	0.1440	0.0019	0.40	OE
Y6XZ4W		0.1666	-0.0019	-0.37	0.1403	-0.0018	-0.38	OE
YLXKFJ		0.1657	-0.0028	-0.56	0.1427	0.0006	0.12	OE
YME93B		0.1617	-0.0068	-1.35	0.1367	-0.0054	-1.15	OE
YYXLQZ		0.1640	-0.0045	-0.89	0.1407	-0.0014	-0.30	GD
ZPR26J		0.1630	-0.0055	-1.08	0.1410	-0.0011	-0.23	OE
ZQUX3E		0.1730	0.0045	0.89	0.1450	0.0029	0.62	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.1685	Percent	0.1421	Percent
Std Dev Btwn Labs	0.0051	Percent	0.0047	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 54 of 58 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1645

AFFG37 (X) - Data appear to be transposed between samples.

QXXLCW (X) - Data for sample M05 are low.

WXLZX9 (X) - Data for both samples are low. Possible Systematic Error.



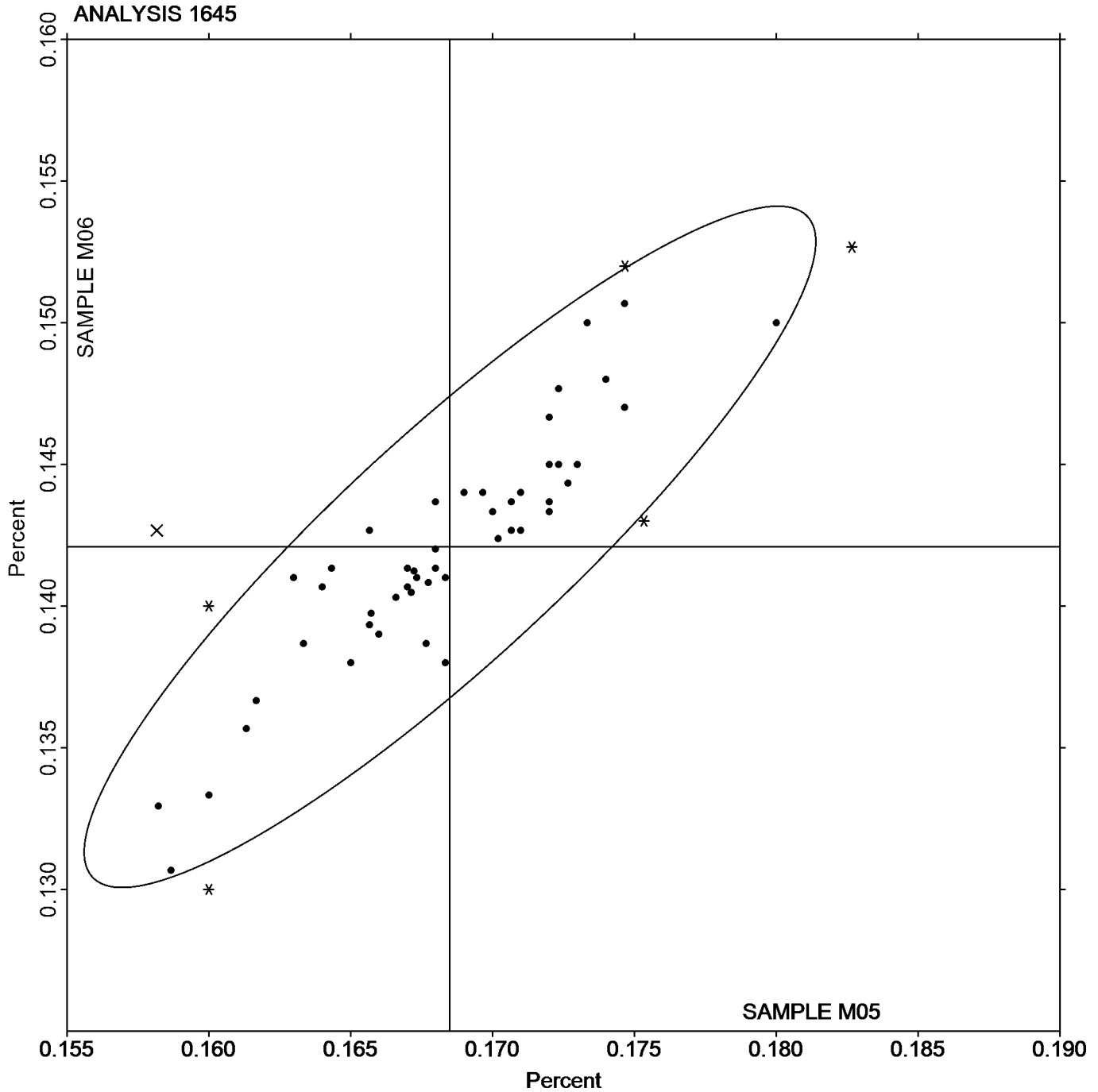
Analysis 1645

Corrosion Resistant Steel, COBALT (Co)

COBALT (Co)

SAMPLE M05
0.1685 Percent

SAMPLE M06
0.1421 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1646

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		9.798	0.071	0.81	9.760	-0.010	-0.12	OE
2NKB4Z		9.817	0.089	1.03	9.957	0.186	2.09	IC
2QFUFR		9.582	-0.145	-1.67	9.697	-0.073	-0.82	OE
3QW9HV		9.777	0.050	0.57	9.808	0.038	0.42	OE
3TB6CL		9.710	-0.017	-0.20	9.740	-0.030	-0.34	DR
4ABC7D		9.680	-0.047	-0.54	9.700	-0.070	-0.79	GD
64M44Y		9.703	-0.024	-0.27	9.757	-0.014	-0.15	WD
74FJQF		9.731	0.003	0.04	9.804	0.034	0.38	XR
7ZH3AF		9.713	-0.014	-0.16	9.770	0.000	0.00	OE
8MLFJB		9.736	0.008	0.10	9.890	0.119	1.34	TI
8MMJ8P		9.740	0.013	0.15	9.707	-0.064	-0.71	OE
AEHJMD		9.720	-0.007	-0.08	9.823	0.053	0.59	WC
AFFG37		9.782	0.054	0.63	9.715	-0.055	-0.62	ED
AMMYC		9.720	-0.007	-0.08	9.780	0.010	0.11	XR
AU2V76		9.745	0.018	0.21	9.861	0.091	1.02	IC
B6BQYA		9.673	-0.054	-0.62	9.657	-0.114	-1.28	OE
BG6K3K		9.867	0.140	1.61	9.753	-0.017	-0.19	OE
CG77J4		9.730	0.003	0.03	9.720	-0.050	-0.56	OE
CK88LL		9.890	0.163	1.87	9.893	0.123	1.38	OE
E486XD		9.713	-0.015	-0.17	9.755	-0.015	-0.17	OE
E7P3Y4		9.747	0.020	0.23	9.821	0.051	0.57	OE
EGVEFC		9.805	0.078	0.90	9.874	0.103	1.16	OE
ER269F		9.725	-0.002	-0.03	9.800	0.030	0.33	WD
FFUAE4		9.553	-0.174	-2.00	9.653	-0.117	-1.31	OE
GDCY6B		9.777	0.049	0.57	9.707	-0.064	-0.71	OE
GJCFDW		9.827	0.099	1.14	9.850	0.080	0.90	OE
GUNDVZ		9.788	0.061	0.70	9.750	-0.021	-0.23	OE
J7KBKP	*	9.807	0.079	0.91	9.693	-0.077	-0.86	OE
KABW3X		9.600	-0.127	-1.46	9.593	-0.177	-1.99	XX
L9384Z		9.582	-0.145	-1.67	9.644	-0.126	-1.41	OE
LLNL8Z		9.727	-0.001	-0.01	9.757	-0.014	-0.15	OE
M7KAKU		9.776	0.048	0.56	9.938	0.167	1.88	XX
MQATC8		9.502	-0.225	-2.59	9.571	-0.199	-2.23	OE
MRMRV2		9.833	0.106	1.22	9.970	0.200	2.24	OE
MY9K82		9.732	0.005	0.06	9.833	0.062	0.70	OE
N33YB2		9.540	-0.187	-2.15	9.580	-0.190	-2.14	OE
NK6GL8		9.681	-0.046	-0.53	9.766	-0.005	-0.05	WD
NKMRXK		9.750	0.023	0.26	9.780	0.010	0.11	OE
Q2XUJR		9.719	-0.009	-0.10	9.762	-0.008	-0.09	DR
QF3KMQ		9.757	0.029	0.34	9.887	0.116	1.31	IC
QKHRCB		9.877	0.149	1.72	9.886	0.115	1.30	OE
QXXLCW	X	9.983	0.256	2.95	9.773	0.003	0.03	OE
RKQJHW		9.553	-0.174	-2.00	9.697	-0.074	-0.83	OE
RMGNB4		9.640	-0.088	-1.01	9.714	-0.057	-0.64	WD
RY9EUM		9.711	-0.017	-0.19	9.765	-0.005	-0.05	WD
TE323Z		9.737	0.009	0.11	9.730	-0.040	-0.45	OE
UUUH3H		9.653	-0.074	-0.85	9.722	-0.049	-0.55	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1646

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UX2EKR		9.751	0.024	0.28	9.833	0.063	0.71	WD
VTWFYY		9.650	-0.077	-0.88	9.719	-0.051	-0.58	XR
WFM7NV		9.773	0.046	0.53	9.778	0.008	0.09	OE
WXLZX9		9.753	0.026	0.30	9.717	-0.054	-0.60	OE
XEBMNX		9.675	-0.053	-0.60	9.738	-0.032	-0.36	XR
XKBBWP		9.747	0.019	0.22	9.753	-0.017	-0.19	OE
XR8J9X		9.847	0.119	1.37	9.813	0.043	0.48	OE
Y6XZ4W		9.657	-0.070	-0.80	9.668	-0.103	-1.15	OE
YGHCPY		9.823	0.096	1.10	9.856	0.086	0.97	OE
YJW2K4		9.623	-0.104	-1.19	9.680	-0.090	-1.01	DR
YLXKFJ		9.847	0.119	1.37	9.890	0.120	1.34	OE
YME93B		9.827	0.099	1.14	9.867	0.096	1.08	OE
YYXLQZ		9.606	-0.121	-1.39	9.681	-0.089	-1.00	GD
ZPR26J		9.787	0.059	0.68	9.863	0.093	1.05	OE
ZQUX3E		9.768	0.040	0.47	9.841	0.071	0.79	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	9.727	Percent	9.770	Percent
Stnd Dev Btwn Labs	0.087	Percent	0.089	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 61 of 62 reporting participants

Key to Method Codes Reported by Participants

DR	Spectrometry - Direct Reading OE (DROES)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
GD	Spectrometry - Glow Discharge (GDS)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	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

QXXLCW (X) - Data for sample M05 are high.



Analysis 1646

Corrosion Resistant Steel, NICKEL (Ni)

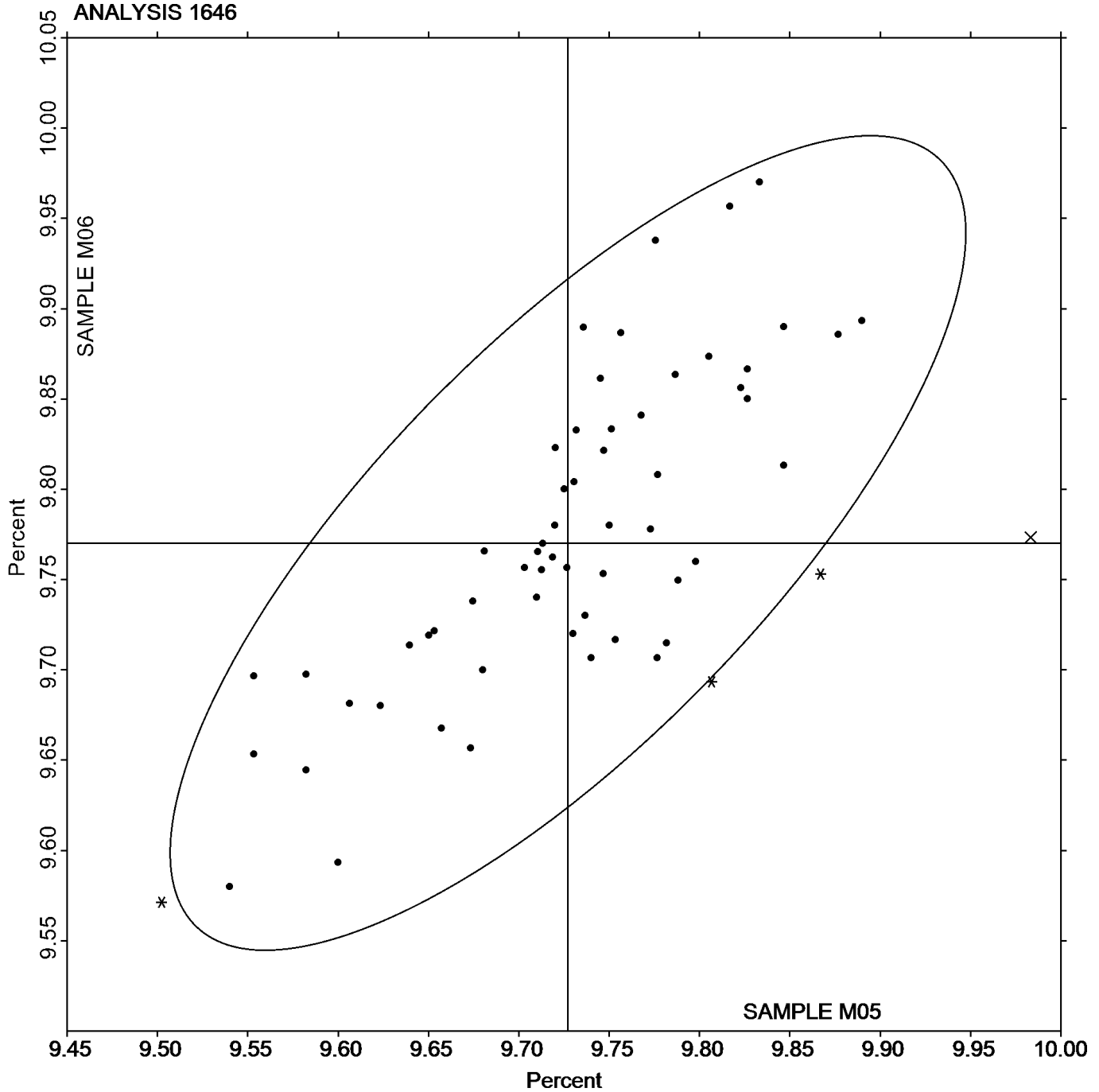
NICKEL (Ni)

SAMPLE M05

9.727 Percent

SAMPLE M06

9.770 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148

Analysis 1647

4th Qtr 2024

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		17.47	0.06	0.62	17.65	0.18	1.74	OE
2NKB4Z	X	18.07	0.66	6.82	18.00	0.53	5.16	IC
2QFUFR		17.41	0.00	-0.05	17.48	0.02	0.16	OE
3QW9HV	X	17.06	-0.35	-3.69	17.21	-0.26	-2.53	OE
3TB6CL		17.39	-0.02	-0.25	17.44	-0.03	-0.29	DR
4ABC7D		17.57	0.16	1.66	17.72	0.25	2.45	GD
64M44Y		17.40	-0.01	-0.15	17.47	0.01	0.06	WD
74FJQF		17.38	-0.03	-0.34	17.43	-0.04	-0.37	XR
7ZH3AF		17.26	-0.15	-1.60	17.33	-0.14	-1.33	OE
8MLFJB		17.31	-0.10	-1.00	17.44	-0.03	-0.30	TI
8MMJ8P		17.46	0.05	0.55	17.57	0.10	1.00	OE
AEHJMD		17.41	0.00	0.01	17.37	-0.10	-0.94	WC
AFFG37		17.46	0.05	0.56	17.39	-0.08	-0.79	ED
AMMYC		17.37	-0.04	-0.42	17.42	-0.05	-0.49	XR
AU2V76		17.33	-0.08	-0.87	17.38	-0.08	-0.81	XX
B6BQYA		17.35	-0.06	-0.63	17.43	-0.04	-0.36	OE
BG6K3K	*	17.64	0.23	2.38	17.48	0.01	0.13	OE
CG77J4		17.24	-0.17	-1.77	17.37	-0.10	-0.94	OE
CK88LL		17.54	0.13	1.34	17.64	0.18	1.71	OE
E486XD	X	17.18	-0.23	-2.36	17.11	-0.35	-3.42	OE
E7P3Y4		17.22	-0.19	-1.98	17.32	-0.15	-1.46	OE
EGVEFC		17.48	0.07	0.76	17.52	0.06	0.55	OE
ER269F		17.51	0.10	1.01	17.57	0.10	1.00	WD
FFUAE4		17.62	0.21	2.14	17.67	0.20	1.96	OE
GDCY6B		17.49	0.08	0.86	17.59	0.12	1.19	OE
GJCFDW		17.24	-0.17	-1.74	17.28	-0.19	-1.84	OE
GUNDVZ		17.39	-0.02	-0.18	17.45	-0.01	-0.13	OE
J7KBKP	*	17.22	-0.19	-1.98	17.19	-0.28	-2.71	OE
KABW3X		17.25	-0.16	-1.70	17.30	-0.16	-1.58	XX
L9384Z		17.50	0.09	0.94	17.49	0.03	0.25	OE
LLNL8Z		17.42	0.01	0.10	17.49	0.02	0.22	OE
M7KAKU		17.34	-0.07	-0.78	17.38	-0.08	-0.81	OE
MQATC8		17.31	-0.10	-1.05	17.38	-0.08	-0.81	OE
MRMRV2		17.43	0.02	0.17	17.50	0.03	0.32	OE
MY9K82		17.42	0.01	0.10	17.48	0.01	0.09	OE
N33YB2		17.53	0.12	1.28	17.60	0.14	1.32	OE
NK6GL8		17.43	0.02	0.19	17.52	0.05	0.52	WD
NKMRXK		17.58	0.17	1.73	17.64	0.17	1.67	OE
Q2XUJR		17.46	0.05	0.48	17.48	0.01	0.09	DR
QF3KMQ		17.53	0.12	1.28	17.50	0.03	0.32	IC
QKHRCB		17.40	-0.01	-0.11	17.49	0.02	0.19	OE
QNBLJ7		17.50	0.09	0.93	17.47	0.00	0.00	GD
QXXLCW	*	17.54	0.13	1.31	17.30	-0.17	-1.65	OE
RKQJHW	*	17.24	-0.17	-1.74	17.48	0.01	0.13	OE
RMGNB4		17.24	-0.17	-1.81	17.30	-0.17	-1.62	WD
RY9EUM		17.45	0.04	0.44	17.50	0.04	0.34	WD
TE323Z		17.40	-0.01	-0.11	17.45	-0.02	-0.20	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1647

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UUUH3H		17.39	-0.02	-0.24	17.44	-0.02	-0.24	WD
UX2EKR		17.46	0.05	0.48	17.51	0.04	0.39	WD
VTWFYY		17.41	0.00	0.00	17.49	0.02	0.18	XR
WFM7NV		17.47	0.06	0.62	17.53	0.06	0.61	OE
WXLZX9		17.33	-0.08	-0.80	17.40	-0.07	-0.65	OE
XEBMNX		17.48	0.07	0.76	17.56	0.09	0.89	XR
XKBBWP		17.37	-0.04	-0.39	17.49	0.03	0.25	OE
XR8J9X		17.33	-0.08	-0.80	17.38	-0.09	-0.84	OE
Y6XZ4W		17.41	0.00	0.04	17.40	-0.07	-0.65	OE
YGHCPY		17.38	-0.03	-0.27	17.45	-0.02	-0.19	OE
YJW2K4		17.34	-0.07	-0.70	17.39	-0.08	-0.75	DR
YLXKFJ		17.32	-0.09	-0.94	17.39	-0.08	-0.75	OE
YME93B		17.55	0.14	1.48	17.58	0.11	1.06	OE
YYXLQZ		17.46	0.04	0.46	17.49	0.02	0.21	GD
ZPR26J		17.48	0.07	0.76	17.48	0.01	0.13	OE
ZQUX3E		17.50	0.09	0.96	17.57	0.10	0.97	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	17.41	Percent	17.47	Percent
Stnd Dev Brwn Labs	0.10	Percent	0.10	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 57 of 63 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1647

2NKB4Z (X) - Data for both samples are high. Possible Systematic Error.

3QW9HV (X) - Data for sample M05 are low.

E486XD (X) - Data for sample M06 are low. Inconsistent within the determinations of sample M05.



Fasteners and Metals Interlaboratory Testing Program

Cycle 148

Analysis 1647

4th Qtr 2024

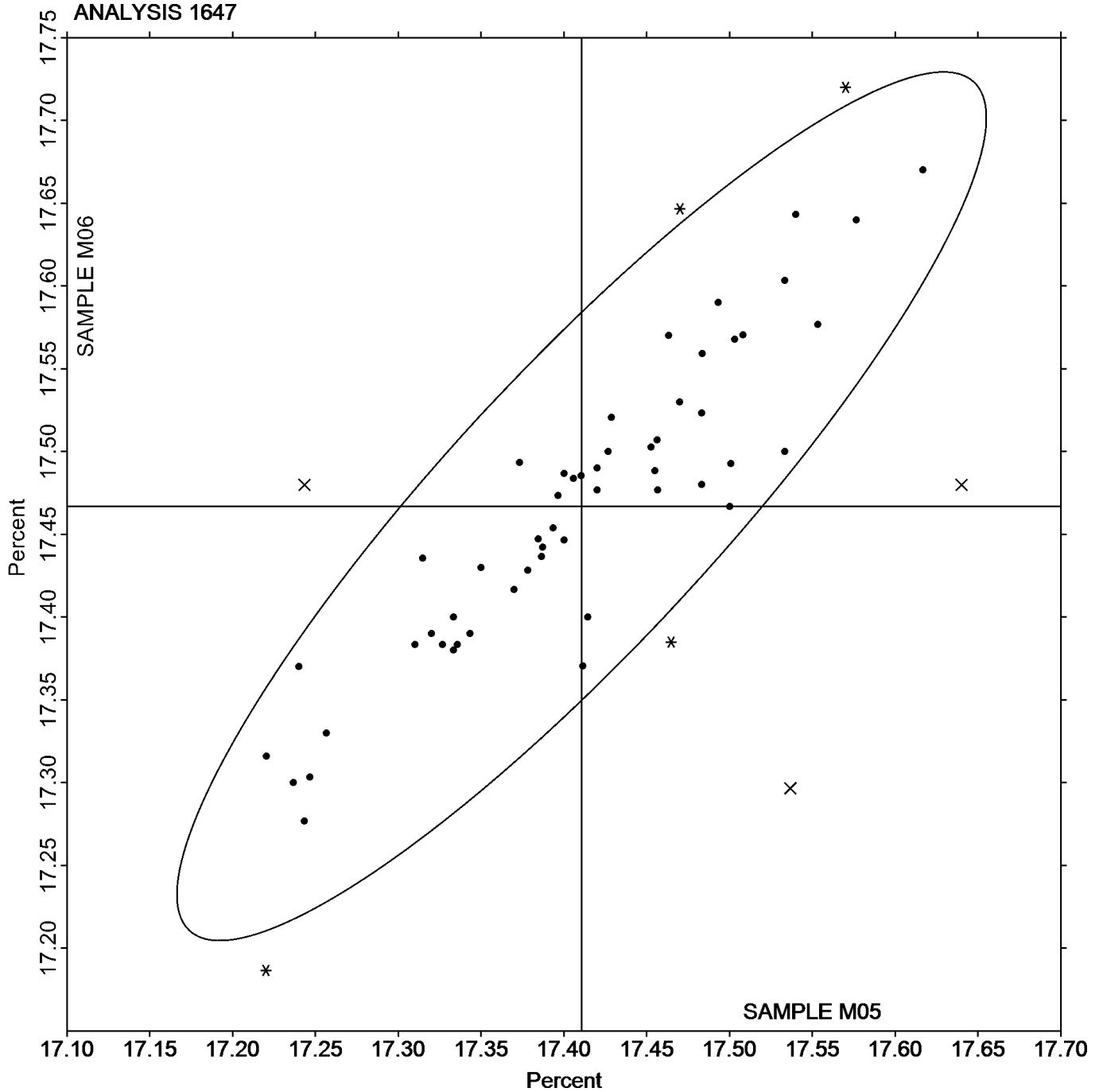
**Corrosion Resistant Steel, CHROMIUM (Cr)
CHROMIUM (Cr)**

SAMPLE M05

SAMPLE M06

17.41 Percent

17.47 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1648

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		0.2447	0.0147	2.12	0.3000	0.0181	2.04	OE
2NKB4Z		0.2210	-0.0089	-1.28	0.2783	-0.0036	-0.40	IC
2QFUFR	X	0.3101	0.0802	11.52	0.3772	0.0953	10.74	OE
3QW9HV		0.2227	-0.0073	-1.04	0.2710	-0.0109	-1.23	OE
3TB6CL		0.2293	-0.0006	-0.08	0.2847	0.0028	0.31	DR
4ABC7D		0.2190	-0.0109	-1.57	0.2690	-0.0129	-1.45	GD
64M44Y		0.2313	0.0014	0.20	0.2850	0.0031	0.35	WD
74FJQF		0.2240	-0.0059	-0.85	0.2773	-0.0046	-0.52	XR
7ZH3AF		0.2367	0.0067	0.97	0.2900	0.0081	0.91	OE
8MLFJB		0.2230	-0.0069	-0.99	0.2717	-0.0102	-1.15	AA
8MMJ8P		0.2177	-0.0123	-1.76	0.2613	-0.0206	-2.32	OE
AFFG37	X	0.2823	0.0524	7.53	0.2297	-0.0522	-5.89	ED
AMMYC	*	0.2200	-0.0099	-1.43	0.2800	-0.0019	-0.21	XR
AU2V76		0.2290	-0.0009	-0.13	0.2840	0.0021	0.24	IC
B6BQYA		0.2287	-0.0013	-0.18	0.2800	-0.0019	-0.21	OE
BG6K3K		0.2360	0.0061	0.87	0.2880	0.0061	0.69	OE
CG77J4	X	0.3030	0.0731	10.50	0.3210	0.0391	4.40	OE
CK88LL		0.2297	-0.0003	-0.04	0.2750	-0.0069	-0.78	OE
E486XD		0.2428	0.0129	1.85	0.2977	0.0158	1.78	OE
E7P3Y4		0.2333	0.0034	0.49	0.2863	0.0044	0.50	OE
EGVEFC	X	0.2353	0.0054	0.78	0.2760	-0.0059	-0.67	OE
ER269F		0.2317	0.0017	0.25	0.2858	0.0039	0.44	WD
FFUAE4		0.2185	-0.0114	-1.64	0.2684	-0.0135	-1.53	OE
GDCY6B	*	0.2273	-0.0026	-0.37	0.3050	0.0231	2.60	OE
GJCFDW		0.2457	0.0157	2.26	0.3030	0.0211	2.38	OE
GUNDVZ		0.2307	0.0007	0.11	0.2837	0.0018	0.20	OE
J7KBKP	X	0.2887	0.0587	8.44	0.3190	0.0371	4.18	OE
KABW3X		0.2310	0.0011	0.16	0.2810	-0.0009	-0.10	XX
L9384Z		0.2371	0.0072	1.04	0.2882	0.0063	0.71	OE
LLNL8Z		0.2243	-0.0056	-0.80	0.2727	-0.0092	-1.04	OE
M7KAKU		0.2283	-0.0016	-0.23	0.2843	0.0024	0.27	OE
MQATC8		0.2260	-0.0039	-0.56	0.2760	-0.0059	-0.67	OE
MRMRV2		0.2247	-0.0053	-0.75	0.2767	-0.0052	-0.59	OE
MY9K82		0.2237	-0.0063	-0.90	0.2733	-0.0086	-0.97	OE
N33YB2		0.2280	-0.0019	-0.28	0.2773	-0.0046	-0.52	OE
NK6GL8		0.2300	0.0001	0.01	0.2826	0.0007	0.07	WD
NKMRXK		0.2403	0.0104	1.50	0.2937	0.0118	1.32	OE
Q2XUJR		0.2322	0.0023	0.33	0.2845	0.0026	0.30	DR
QF3KMQ		0.2400	0.0101	1.45	0.2900	0.0081	0.91	IC
QKHRCB		0.2327	0.0027	0.39	0.2827	0.0008	0.09	OE
QNBLJ7		0.2417	0.0117	1.69	0.3010	0.0191	2.15	GD
QXXLCW	X	0.2507	0.0207	2.98	0.4470	0.1651	18.60	OE
RKQJHW		0.2250	-0.0049	-0.71	0.2750	-0.0069	-0.78	OE
RMGNB4		0.2253	-0.0046	-0.66	0.2790	-0.0029	-0.33	WD
RY9EUM		0.2332	0.0033	0.48	0.2862	0.0043	0.49	WD
TE323Z		0.2287	-0.0013	-0.18	0.2803	-0.0016	-0.18	OE
UUUH3H		0.2305	0.0006	0.08	0.2833	0.0014	0.16	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1648

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UX2EKR		0.2267	-0.0033	-0.47	0.2770	-0.0049	-0.55	WD
VTWFYY		0.2293	-0.0006	-0.08	0.2817	-0.0002	-0.03	XR
WFM7NV		0.2400	0.0101	1.45	0.2920	0.0101	1.14	OE
WXLZX9	X	0.1917	-0.0383	-5.50	0.2353	-0.0466	-5.25	OE
XEBMNX		0.2310	0.0011	0.16	0.2833	0.0014	0.16	XR
XKBBWP		0.2200	-0.0099	-1.43	0.2700	-0.0119	-1.34	OE
XR8J9X		0.2270	-0.0029	-0.42	0.2770	-0.0049	-0.55	OE
Y6XZ4W		0.2314	0.0015	0.21	0.2876	0.0057	0.64	OE
YLXKFJ		0.2237	-0.0063	-0.90	0.2747	-0.0072	-0.82	OE
YME93B		0.2313	0.0014	0.20	0.2847	0.0028	0.31	OE
YYXLQZ		0.2410	0.0111	1.59	0.2953	0.0134	1.51	GD
ZPR26J		0.2247	-0.0053	-0.75	0.2713	-0.0106	-1.19	OE
ZQUX3E		0.2217	-0.0083	-1.19	0.2747	-0.0072	-0.82	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.2299	Percent	0.2819	Percent
Std Dev Btw Labs	0.0070	Percent	0.0089	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 51 of 60 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1648

- 2QFUFR (X) - Data for both samples are high.
- AFFG37 (X) - Data appear to be transposed between samples.
- CG77J4 (X) - Data for both samples are high.
- EGVEFC (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample M05.
- J7KBKP (X) - Data for both samples are high. Inconsistent within the determinations of sample M06.
- QXXLCW (X) - Data for both samples are high.
- WXLZX9 (X) - Data for both samples are low.



Fasteners and Metals Interlaboratory Testing Program

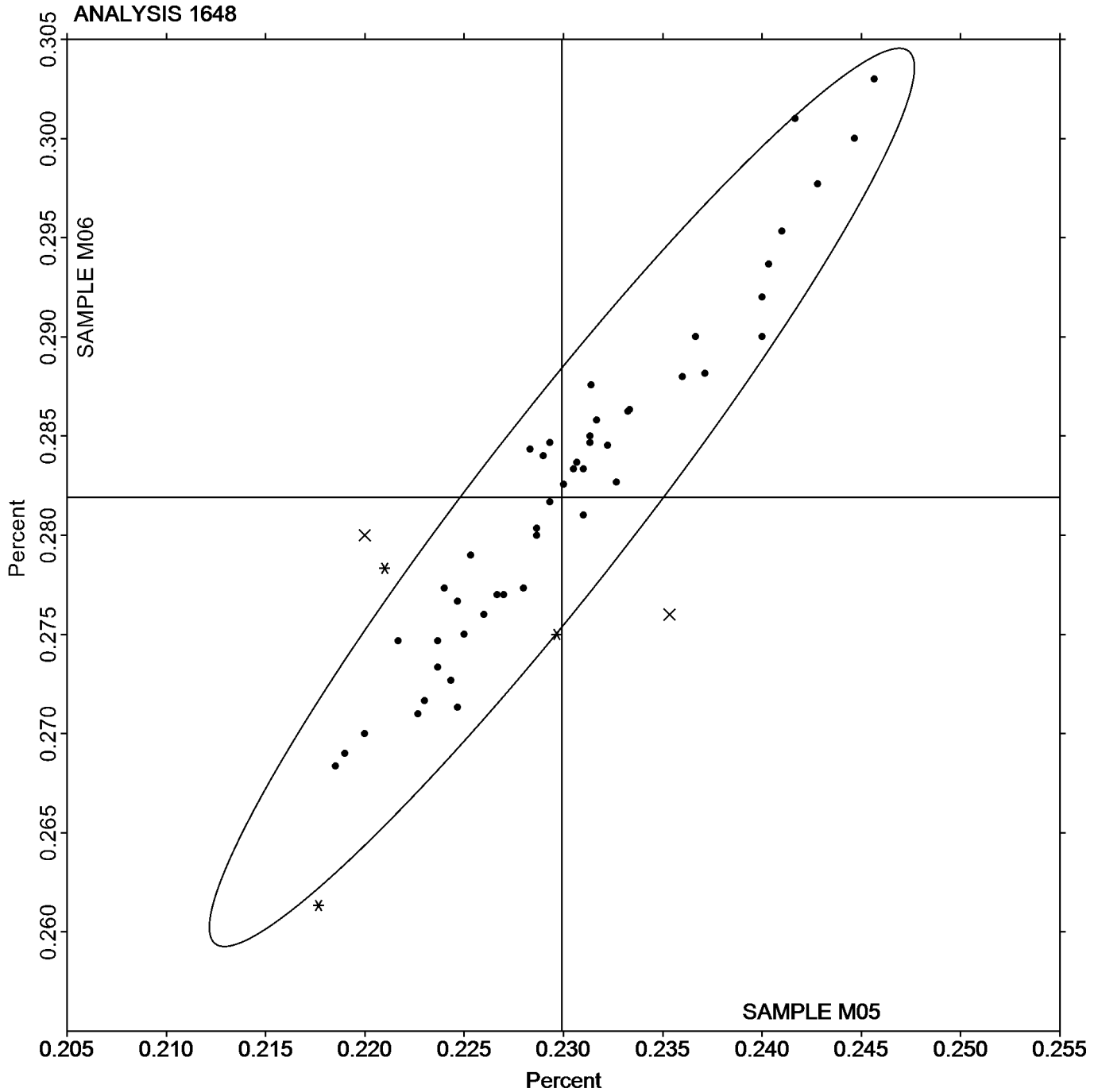
Cycle 148
4th Qtr 2024

Analysis 1648

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

SAMPLE M05
0.2299 Percent

SAMPLE M06
0.2819 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148

Analysis 1649

4th Qtr 2024

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		0.2783	0.0056	0.67	0.2843	0.0066	0.77	OE
2NKB4Z	*	0.2677	-0.0050	-0.59	0.2820	0.0042	0.50	IC
2QFUFR		0.2717	-0.0010	-0.12	0.2772	-0.0006	-0.07	OE
3QW9HV	X	0.2400	-0.0327	-3.87	0.2400	-0.0378	-4.44	OE
3TB6CL		0.2697	-0.0030	-0.36	0.2727	-0.0051	-0.60	DR
4ABC7D		0.2770	0.0043	0.51	0.2830	0.0052	0.62	GD
64M44Y		0.2743	0.0016	0.19	0.2787	0.0009	0.11	WD
74FJQF		0.2657	-0.0070	-0.83	0.2703	-0.0074	-0.87	XR
7ZH3AF	X	0.2667	-0.0060	-0.71	0.2600	-0.0178	-2.09	OE
8MLFJB		0.2763	0.0036	0.43	0.2837	0.0059	0.69	AA
8MMJ8P		0.2693	-0.0034	-0.40	0.2710	-0.0068	-0.80	OE
AFFG37	*	0.2870	0.0143	1.69	0.2800	0.0022	0.26	ED
AMMYC		0.2780	0.0053	0.63	0.2837	0.0059	0.69	XR
AU2V76		0.2743	0.0016	0.19	0.2820	0.0042	0.50	IC
B6BQYA		0.2727	0.0000	0.00	0.2807	0.0029	0.34	OE
BG6K3K		0.2850	0.0123	1.46	0.2890	0.0112	1.32	OE
CG77J4	X	0.3040	0.0313	3.70	0.3120	0.0342	4.03	OE
CK88LL		0.2880	0.0153	1.81	0.2937	0.0159	1.87	OE
E486XD	X	0.2456	-0.0271	-3.20	0.2590	-0.0187	-2.20	OE
E7P3Y4		0.2727	0.0000	0.00	0.2757	-0.0021	-0.25	OE
EGVEFC	X	0.2597	-0.0130	-1.54	0.2773	-0.0004	-0.05	OE
ER269F		0.2743	0.0016	0.19	0.2803	0.0025	0.30	WD
FFUAE4		0.2613	-0.0114	-1.34	0.2677	-0.0101	-1.19	OE
GDCY6B		0.2647	-0.0080	-0.95	0.2693	-0.0084	-0.99	OE
GJCFDW	X	0.2477	-0.0250	-2.96	0.2477	-0.0301	-3.54	OE
GUNDVZ		0.2760	0.0033	0.39	0.2810	0.0032	0.38	OE
J7KBKP	X	0.2903	0.0176	2.09	0.3220	0.0442	5.20	OE
KABW3X		0.2770	0.0043	0.51	0.2780	0.0002	0.03	XX
L9384Z		0.2696	-0.0031	-0.37	0.2762	-0.0016	-0.18	OE
LLNL8Z		0.2730	0.0003	0.04	0.2767	-0.0011	-0.13	OE
M7KAKU		0.2713	-0.0014	-0.16	0.2810	0.0032	0.38	OE
MQATC8		0.2897	0.0170	2.01	0.2950	0.0172	2.03	OE
MRMRV2		0.2673	-0.0054	-0.63	0.2743	-0.0034	-0.40	OE
MY9K82	*	0.2493	-0.0234	-2.76	0.2523	-0.0254	-2.99	OE
N33YB2		0.2707	-0.0020	-0.24	0.2710	-0.0068	-0.80	OE
NK6GL8		0.2799	0.0072	0.85	0.2853	0.0075	0.88	WD
NKMRXK		0.2530	-0.0197	-2.33	0.2573	-0.0204	-2.40	OE
Q2XUJR		0.2659	-0.0068	-0.80	0.2713	-0.0065	-0.76	DR
QF3KMQ		0.2800	0.0073	0.86	0.2800	0.0022	0.26	IC
QKHRCB		0.2773	0.0046	0.55	0.2800	0.0022	0.26	OE
QNBLJ7		0.2667	-0.0060	-0.71	0.2723	-0.0054	-0.64	GD
QXXLCW	X	0.2720	-0.0007	-0.08	0.3220	0.0442	5.20	OE
RKQJHW		0.2637	-0.0090	-1.07	0.2720	-0.0058	-0.68	OE
RMGNB4		0.2707	-0.0020	-0.24	0.2760	-0.0018	-0.21	WD
RY9EUM		0.2774	0.0047	0.56	0.2862	0.0085	1.00	WD
TE323Z		0.2697	-0.0030	-0.36	0.2737	-0.0041	-0.48	OE
UUUH3H		0.2716	-0.0011	-0.13	0.2769	-0.0009	-0.10	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1649

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

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
UX2EKR		0.2757	0.0030	0.35	0.2810	0.0032	0.38	WD
VTWFYY		0.2743	0.0016	0.19	0.2790	0.0012	0.15	XR
WFM7NV		0.2640	-0.0087	-1.03	0.2680	-0.0098	-1.15	OE
WXLZX9		0.2690	-0.0037	-0.44	0.2723	-0.0054	-0.64	OE
XEBMNX		0.2757	0.0030	0.35	0.2800	0.0022	0.26	XR
XKBBWP		0.2600	-0.0127	-1.50	0.2700	-0.0078	-0.91	OE
XR8J9X		0.2777	0.0050	0.59	0.2820	0.0042	0.50	OE
Y6XZ4W		0.2640	-0.0087	-1.03	0.2693	-0.0084	-0.99	OE
YLXKFJ		0.2717	-0.0010	-0.12	0.2770	-0.0008	-0.09	OE
YME93B		0.2757	0.0030	0.35	0.2827	0.0049	0.58	OE
YYXLQZ		0.2723	-0.0004	-0.04	0.2780	0.0002	0.03	GD
ZPR26J	*	0.2977	0.0250	2.95	0.3010	0.0232	2.73	OE
ZQUX3E		0.2840	0.0113	1.34	0.2887	0.0109	1.28	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.2727	Percent	0.2778	Percent
Std Dev Btwn Labs	0.0085	Percent	0.0085	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 50 of 60 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1649

- 3QW9HV (X) - Data for both samples are low. Possible Systematic Error.
- 7ZH3AF (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample M05.
- CG77J4 (X) - Data for both samples are high. Possible Systematic Error.
- E486XD (X) - Data for sample M05 are low.
- EGVEFC (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- GJCFDW (X) - Data for both samples are low. Possible Systematic Error.
- J7KBKP (X) - Data for sample M06 are high. Inconsistent within the determinations of sample M06.
- QXXLCW (X) - Data for sample M06 are high.



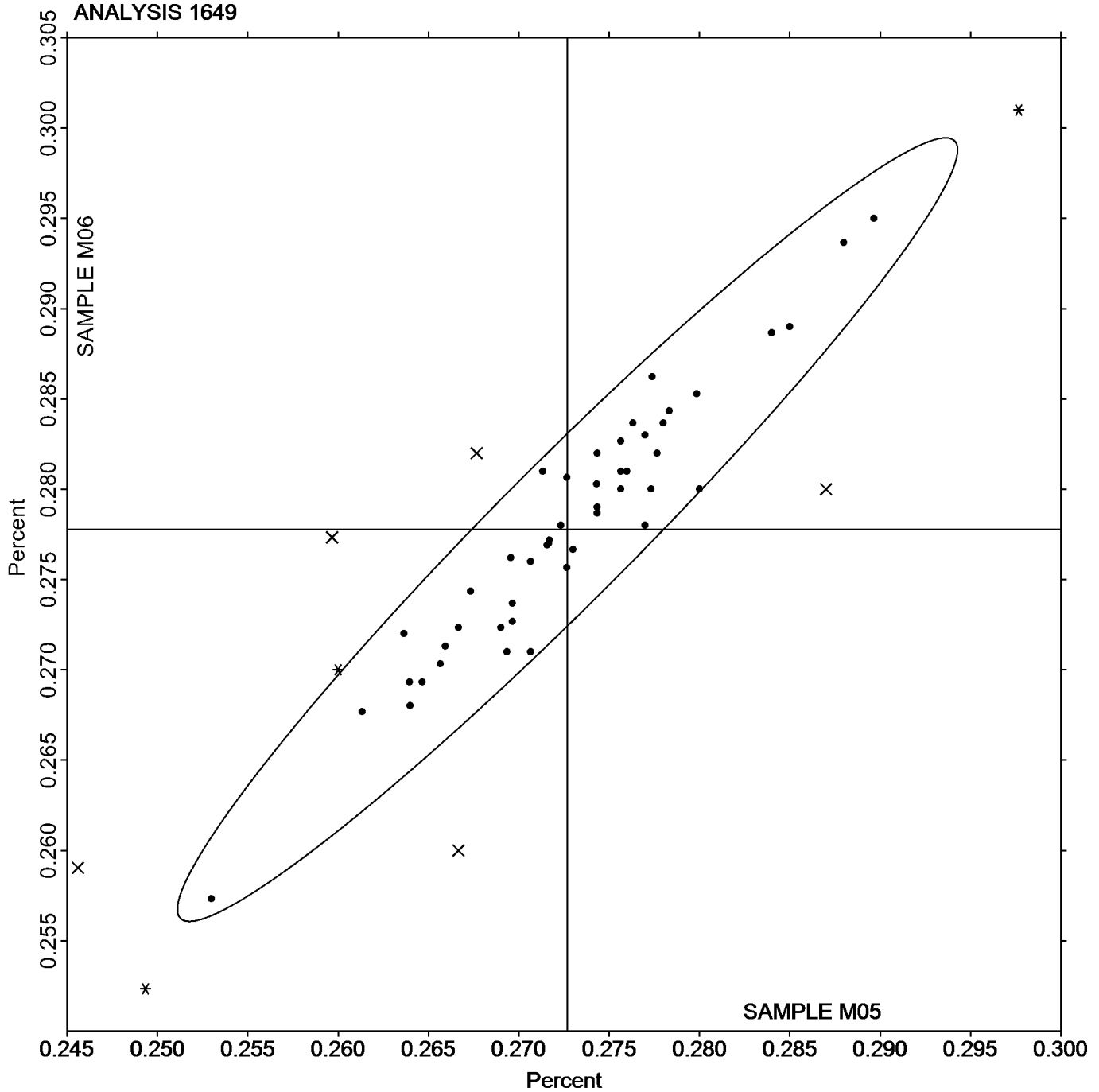
Analysis 1649

Corrosion Resistant Steel, COPPER (Cu)

COPPER (Cu)

SAMPLE M05
0.2727 Percent

SAMPLE M06
0.2778 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1653

Corrosion Resistant Steel, TITANIUM (Ti)
TITANIUM (Ti)

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2LWY3A		0.4257	-0.0085	-0.55	0.4380	-0.0135	-0.89	OE
2NKB4Z		0.4333	-0.0008	-0.05	0.4683	0.0168	1.11	IC
2QFUFR		0.4200	-0.0141	-0.92	0.4417	-0.0098	-0.64	OE
3QW9HV		0.4487	0.0145	0.94	0.4657	0.0142	0.93	OE
3TB6CL		0.4297	-0.0045	-0.29	0.4407	-0.0108	-0.71	DR
4ABC7D		0.3980	-0.0362	-2.35	0.4180	-0.0335	-2.21	GD
64M44Y		0.4210	-0.0132	-0.86	0.4397	-0.0118	-0.78	WD
74FJQF		0.4300	-0.0042	-0.27	0.4503	-0.0012	-0.08	XR
7ZH3AF		0.4233	-0.0108	-0.71	0.4400	-0.0115	-0.76	OE
8MLFJB		0.4317	-0.0025	-0.16	0.4547	0.0032	0.21	XX
8MMJ8P		0.4470	0.0128	0.84	0.4687	0.0172	1.13	OE
AFFG37	*	0.4727	0.0385	2.51	0.4503	-0.0012	-0.08	ED
AMMYC		0.4300	-0.0042	-0.27	0.4500	-0.0015	-0.10	XR
AU2V76		0.4317	-0.0025	-0.16	0.4617	0.0102	0.67	IC
B6BQYA		0.4357	0.0015	0.10	0.4490	-0.0025	-0.17	OE
BG6K3K		0.4490	0.0148	0.97	0.4600	0.0085	0.56	OE
CG77J4		0.4510	0.0168	1.10	0.4640	0.0125	0.82	OE
CK88LL	M	No Data Reported			0.4397	-0.0118	-0.78	OE
E486XD	*	0.4789	0.0448	2.92	0.4936	0.0421	2.77	OE
E7P3Y4		0.4533	0.0192	1.25	0.4790	0.0275	1.81	OE
EGVEFC	*	0.4663	0.0322	2.10	0.4443	-0.0072	-0.47	XX
ER269F		0.4427	0.0085	0.56	0.4638	0.0123	0.81	WD
GDCY6B		0.4547	0.0205	1.34	0.4660	0.0145	0.95	OE
GJCFDW		0.4310	-0.0032	-0.21	0.4413	-0.0102	-0.67	OE
GUNDVZ		0.4253	-0.0088	-0.57	0.4390	-0.0125	-0.82	OE
J7KBKP	X	0.2557	-0.1785	-11.62	0.3783	-0.0732	-4.82	OE
KABW3X		0.4430	0.0088	0.58	0.4523	0.0008	0.05	XX
L9384Z		0.4339	-0.0003	-0.02	0.4561	0.0046	0.30	OE
LLNL8Z		0.4413	0.0072	0.47	0.4490	-0.0025	-0.17	OE
M7KAKU		0.4453	0.0112	0.73	0.4623	0.0108	0.71	OE
MQATC8		0.4063	-0.0278	-1.81	0.4373	-0.0142	-0.93	OE
MRMRV2		0.4200	-0.0142	-0.92	0.4430	-0.0085	-0.56	OE
N33YB2		0.4567	0.0225	1.47	0.4603	0.0088	0.58	OE
NK6GL8		0.4212	-0.0130	-0.84	0.4415	-0.0100	-0.66	WD
NKMRXK		0.4510	0.0168	1.10	0.4647	0.0132	0.87	OE
Q2XUJR		0.4504	0.0162	1.06	0.4587	0.0072	0.47	DR
QF3KMQ		0.4467	0.0125	0.81	0.4667	0.0152	1.00	IC
QKHRCB		0.4387	0.0045	0.29	0.4500	-0.0015	-0.10	OE
QNBLJ7		0.4010	-0.0332	-2.16	0.4117	-0.0398	-2.63	GD
QXXLCW		0.4217	-0.0125	-0.81	0.4497	-0.0018	-0.12	OE
RKQJHW		0.4200	-0.0142	-0.92	0.4400	-0.0115	-0.76	OE
RMGNB4		0.4433	0.0092	0.60	0.4627	0.0112	0.74	WD
RY9EUM		0.4563	0.0221	1.44	0.4785	0.0270	1.78	WD
TE323Z		0.4207	-0.0135	-0.88	0.4343	-0.0172	-1.13	OE
UUUH3H		0.4336	-0.0006	-0.04	0.4498	-0.0017	-0.11	WD
UX2EKR		0.4313	-0.0028	-0.18	0.4503	-0.0012	-0.08	WD
VTWFYY		0.4193	-0.0148	-0.97	0.4393	-0.0122	-0.80	XR



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1653

Corrosion Resistant Steel, TITANIUM (Ti)
TITANIUM (Ti)

WebCode	Data Flag	Sample M05			Sample M06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WFM7NV		0.4110	-0.0232	-1.51	0.4230	-0.0285	-1.88	OE
WXLZX9		0.4373	0.0032	0.21	0.4397	-0.0118	-0.78	OE
XEBMNX		0.4337	-0.0005	-0.03	0.4523	0.0008	0.05	XR
XKBBWP		0.4333	-0.0008	-0.05	0.4600	0.0085	0.56	OE
XR8J9X		0.4440	0.0098	0.64	0.4560	0.0045	0.30	OE
Y6XZ4W	X	0.5033	0.0691	4.50	0.5109	0.0594	3.91	OE
YGHCPY		0.4360	0.0019	0.12	0.4491	-0.0024	-0.16	OE
YLXKFJ		0.4423	0.0082	0.53	0.4537	0.0022	0.14	OE
YME93B		0.4267	-0.0075	-0.49	0.4400	-0.0115	-0.76	OE
YYXLQZ		0.4253	-0.0088	-0.57	0.4530	0.0015	0.10	GD
ZPR26J		0.4110	-0.0232	-1.51	0.4310	-0.0205	-1.35	OE
ZQUX3E		0.4507	0.0165	1.07	0.4727	0.0212	1.39	WD

Summary Statistics

	Sample M05		Sample M06	
Grand Means	0.4342	Percent	0.4515	Percent
Std Dev Btwn Labs	0.0154	Percent	0.0152	Percent

Samples M05, M06 : AISI 321, AISI 321

Statistics based on 54 of 59 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES)
- GD Spectrometry - Glow Discharge (GDS)
- OE Spectrometry - Optical Emission (OES)
- XR X-Ray Fluorescence - ED or WD not specified
- 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

Comments on Assigned Data Flags for Test #1653

- CK88LL (M) - Participant did not submit data for sample M05.
- J7KBKP (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample M06.
- Y6XZ4W (X) - Data for both samples are high. Possible Systematic Error.

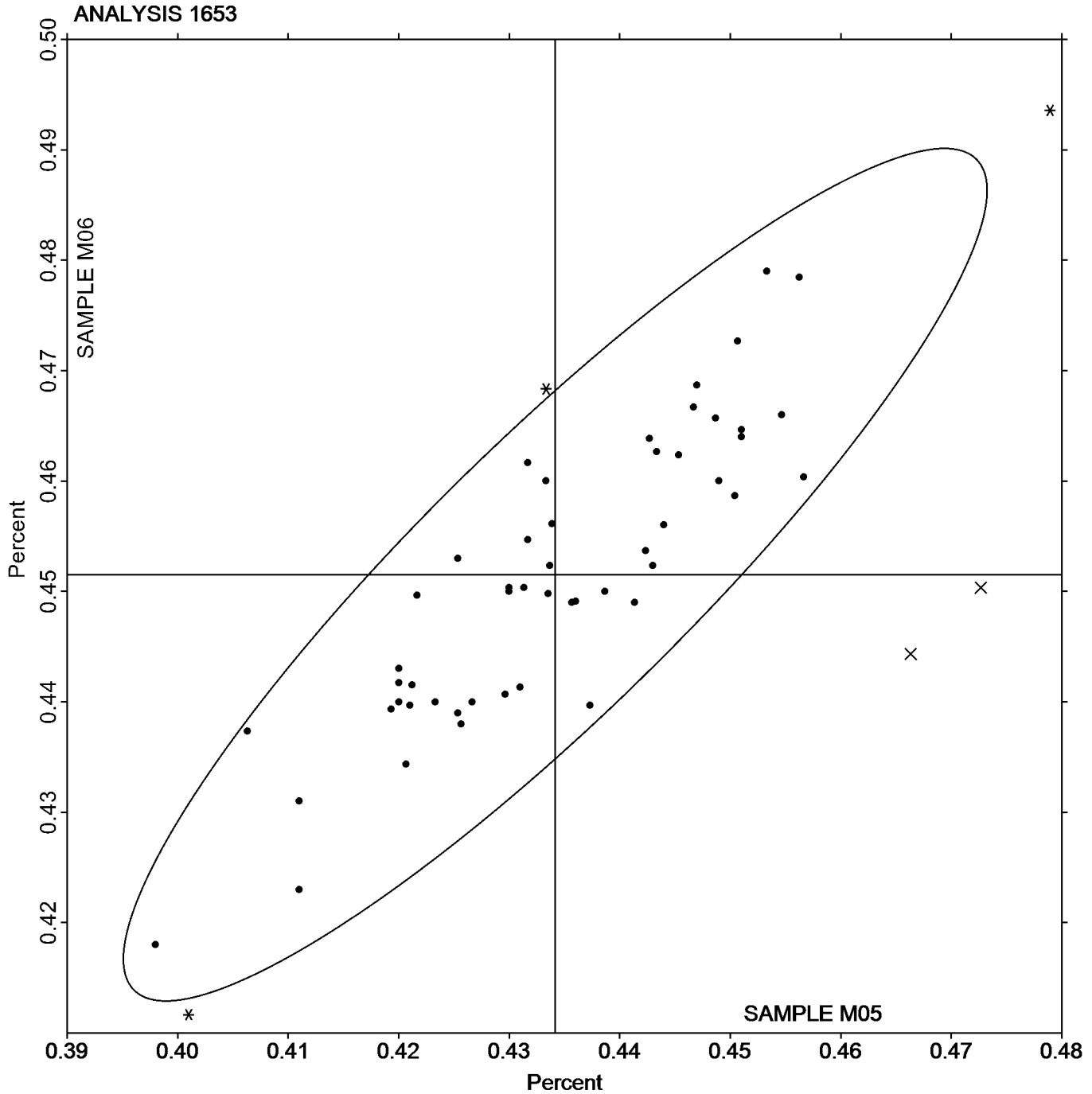


Analysis 1653

Corrosion Resistant Steel, TITANIUM (Ti)
TITANIUM (Ti)

SAMPLE M05
0.4342 Percent

SAMPLE M06
0.4515 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1700

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY		80.80	-0.03	-0.06	81.43	0.09	0.21	OE
3Z463T		80.90	0.07	0.16	81.45	0.11	0.25	OE
6TEAFE		80.73	-0.10	-0.24	81.28	-0.06	-0.12	BD
6W2BRZ		81.02	0.19	0.44	81.53	0.20	0.44	OE
8A3QLU		80.49	-0.34	-0.79	81.16	-0.17	-0.37	OE
8MMJ8P		80.70	-0.13	-0.30	81.20	-0.13	-0.29	OE
9B3ULN		80.54	-0.29	-0.68	81.08	-0.25	-0.55	OE
ADDHPR		81.81	0.98	2.29	82.24	0.91	2.00	OE
AU2V76		80.71	-0.12	-0.29	81.22	-0.11	-0.24	OE
AYQBTQ		81.59	0.76	1.77	81.78	0.44	0.98	OE
BG6K3K		80.76	-0.07	-0.16	81.27	-0.06	-0.14	OE
CG77J4		80.75	-0.08	-0.18	81.28	-0.05	-0.12	BD
GUNDVZ		80.76	-0.07	-0.17	81.27	-0.06	-0.14	GR
HJTTGY	*	81.91	1.08	2.54	82.60	1.26	2.78	XX
KE9NXU	*	79.93	-0.90	-2.10	80.07	-1.27	-2.79	IC
L9384Z		80.66	-0.17	-0.40	81.23	-0.10	-0.22	WD
N33YB2		80.41	-0.42	-0.97	80.95	-0.38	-0.84	OE
Q2XUJR		80.81	-0.02	-0.04	81.10	-0.23	-0.51	BD
QF3KMQ		80.70	-0.13	-0.30	81.17	-0.17	-0.37	IC
QNBLJ7		81.12	0.29	0.69	81.55	0.21	0.47	EL
WFM7NV		80.69	-0.14	-0.33	81.24	-0.09	-0.20	OE
XKBBWP		80.80	-0.03	-0.07	81.43	0.10	0.22	OE
XR8J9X		80.61	-0.22	-0.51	81.26	-0.07	-0.16	BD
ZPR26J		80.70	-0.13	-0.30	81.20	-0.13	-0.29	OE

Summary Statistics

	Sample K05		Sample K06	
Grand Means	80.83	Percent	81.33	Percent
Stnd Dev Brwn Labs	0.43	Percent	0.45	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 24 of 24 reporting participants

Key to Method Codes Reported by Participants

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



Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1700

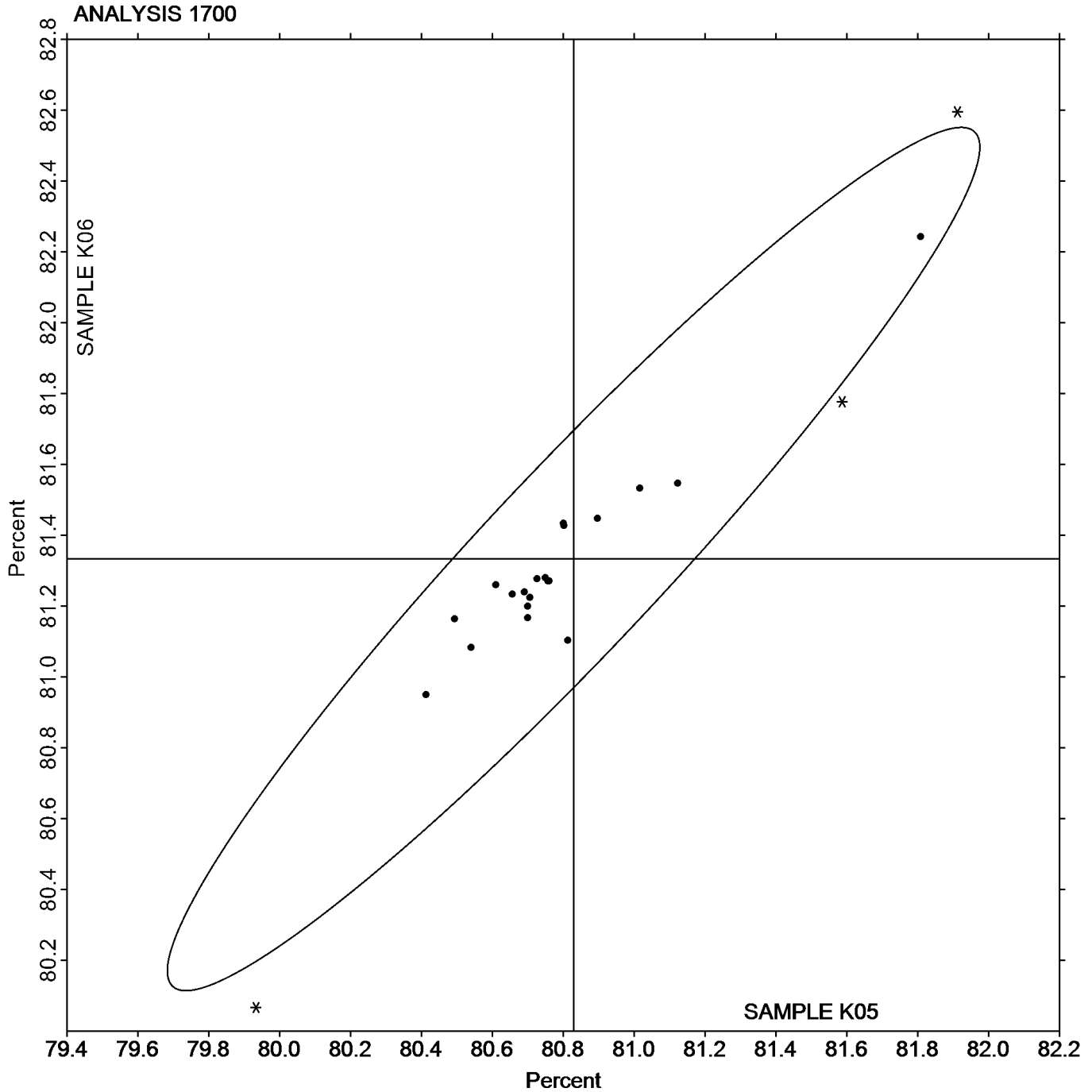
Copper-based Alloy, COPPER (Cu)
COPPER (Cu)

SAMPLE K05

80.83 Percent

SAMPLE K06

81.33 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1701

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY		0.0117	-0.0032	-0.63	0.00270	-0.00453	-1.04	OE
3Z463T		0.0170	0.0021	0.42	0.00807	0.00084	0.19	OE
6TEAFE		0.0167	0.0018	0.36	0.00687	-0.00036	-0.08	IC
6W2BRZ		0.0170	0.0021	0.42	0.0100	0.00277	0.63	OE
8MMJ8P	X	0.2197	0.2048	40.46	0.0140	0.00677	1.55	OE
9B3ULN		0.0137	-0.0012	-0.24	0.00877	0.00154	0.35	OE
ADDHPR		0.0248	0.0099	1.96	0.0178	0.01060	2.43	OE
AU2V76	M	0.0133	-0.0016	-0.32	No Data Reported			OE
BG6K3K		0.0114	-0.0035	-0.69	0.00200	-0.00523	-1.20	OE
CG77J4		0.0210	0.0061	1.21	0.0130	0.00577	1.32	OE
GUNDVZ		0.0152	0.0003	0.05	0.00617	-0.00106	-0.24	IC
KE9NXU		0.0127	-0.0022	-0.44	0.00400	-0.00323	-0.74	IC
L9384Z		0.0140	-0.0009	-0.18	0.00700	-0.00023	-0.05	OE
N33YB2		0.0180	0.0031	0.61	0.00933	0.00210	0.48	OE
Q2XUJR		0.0134	-0.0015	-0.30	0.00527	-0.00196	-0.45	DR
QF3KMQ		0.0120	-0.0029	-0.57	0.00400	-0.00323	-0.74	IC
WFM7NV	*	0.000100	-0.0148	-2.92	0.000100	-0.00713	-1.63	OE
XKBBWP		0.0150	0.0001	0.02	0.00800	0.00077	0.18	OE
XR8J9X		0.0152	0.0003	0.06	0.00437	-0.00286	-0.66	OE
ZPR26J		0.0192	0.0043	0.86	0.0127	0.00544	1.25	OE

Summary Statistics

	Sample K05		Sample K06	
Grand Means	0.0149	Percent	0.00723	Percent
Stnd Dev Btwn Labs	0.0051	Percent	0.00437	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 18 of 20 reporting participants

Key to Method Codes Reported by Participants

DR Spectrometry - Direct Reading OE (DROES) IC Spectrometry - Inductively Coupled Plasma (ICP)
OE Spectrometry - Optical Emission (OES)

Comments on Assigned Data Flags for Test #1701

8MMJ8P (X) - Data for sample K05 are extreme.

AU2V76 (M) - Participant did not submit data for sample K06.



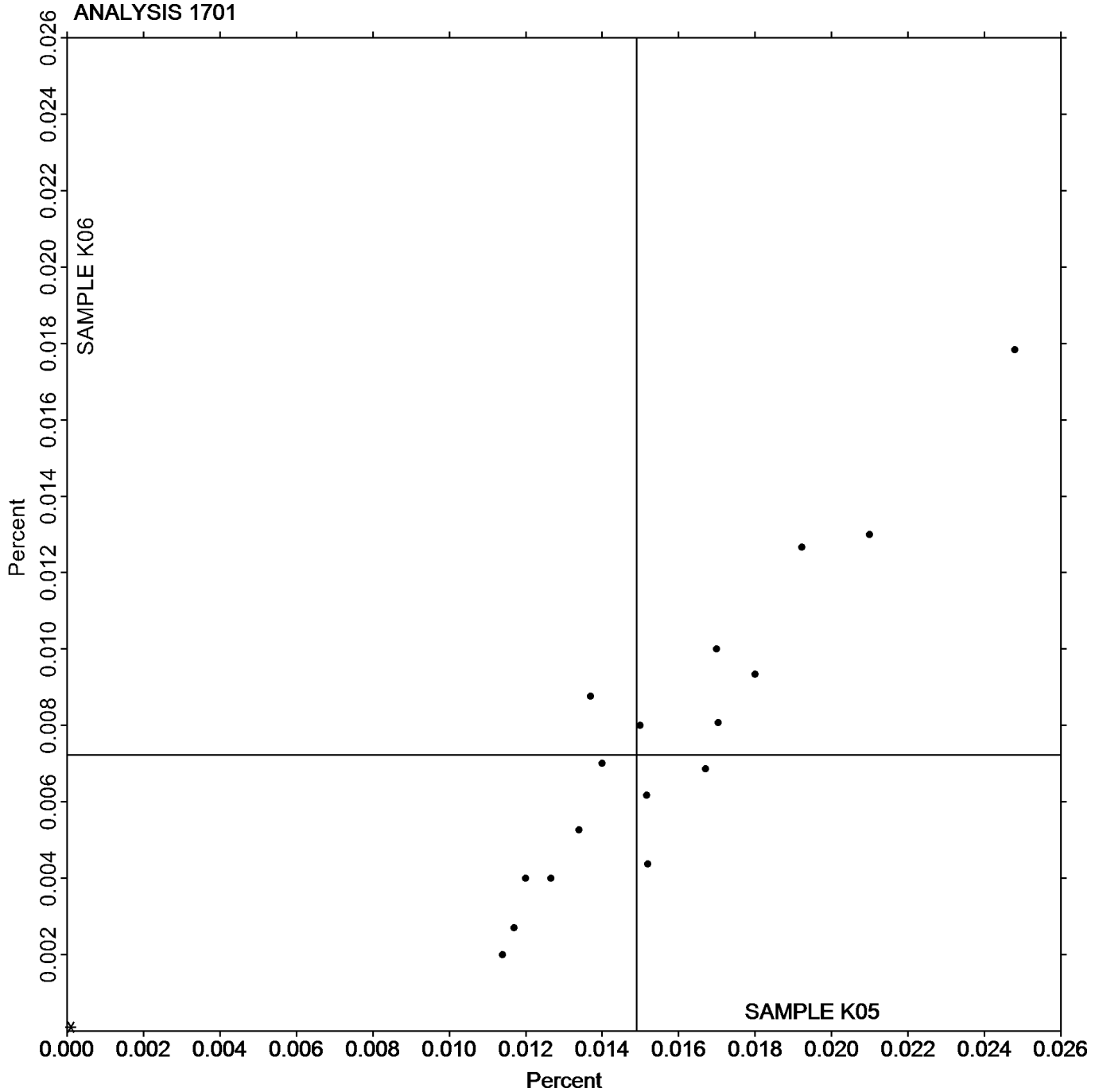
Analysis 1701

Copper-based Alloy, TIN (Sn)

TIN (Sn)

SAMPLE K05
0.0149 Percent

SAMPLE K06
0.00723 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1702

Copper-based Alloy, LEAD (Pb)
LEAD (Pb)

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY		0.00459	-0.00104	-0.35	0.00983	-0.0022	-0.47	OE
3Z463T		0.00787	0.00223	0.74	0.0147	0.0027	0.58	OE
6TEAFE		0.00760	0.00196	0.66	0.0169	0.0049	1.04	IC
6W2BRZ		0.00533	-0.00030	-0.10	0.00700	-0.0050	-1.07	OE
8A3QLU		0.00147	-0.00417	-1.39	0.00500	-0.0070	-1.50	OE
8MMJ8P		0.0127	0.00703	2.35	0.0223	0.0102	2.19	OE
9B3ULN		0.00857	0.00293	0.98	0.0103	-0.0017	-0.37	OE
ADDHPR	X	0.0621	0.05643	18.83	0.0758	0.0638	13.65	OE
AU2V76	M	No Data Reported			0.0150	0.0030	0.64	OE
AYQBTQ		0.00433	-0.00130	-0.43	0.0120	0.0000	0.00	OE
BG6K3K		0.00380	-0.00184	-0.61	0.00740	-0.0046	-0.99	OE
CG77J4		0.00500	-0.00064	-0.21	0.00600	-0.0060	-1.29	OE
GUNDVZ		0.00613	0.00050	0.17	0.0127	0.0007	0.15	IC
HJTTGY		0.00513	-0.00050	-0.17	0.0141	0.0020	0.44	AA
KE9NXU		0.00367	-0.00197	-0.66	0.0120	0.0000	0.00	IC
L9384Z		0.00590	0.00026	0.09	0.0147	0.0027	0.58	OE
N33YB2		0.00900	0.00336	1.12	0.0137	0.0016	0.35	OE
Q2XUJR		0.00893	0.00330	1.10	0.0165	0.0045	0.96	DR
QF3KMQ		0.00300	-0.00264	-0.88	0.0100	-0.0020	-0.43	IC
WFM7NV		0.000100	-0.00554	-1.85	0.00370	-0.0083	-1.78	OE
XKBBWP		0.00900	0.00336	1.12	0.0190	0.0070	1.49	OE
XR8J9X		0.00260	-0.00304	-1.01	0.0137	0.0016	0.35	OE
ZPR26J		0.00367	-0.00197	-0.66	0.0109	-0.0011	-0.24	OE

Summary Statistics

	Sample K05		Sample K06	
Grand Means	0.00564	Percent	0.0120	Percent
Std Dev Btwn Labs	0.00300	Percent	0.0047	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 21 of 23 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- DR Spectrometry - Direct Reading OE (DROES)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)

Comments on Assigned Data Flags for Test #1702

- ADDHPR (X) - Extreme data.
- AU2V76 (M) - Participant did not submit data for sample K05.



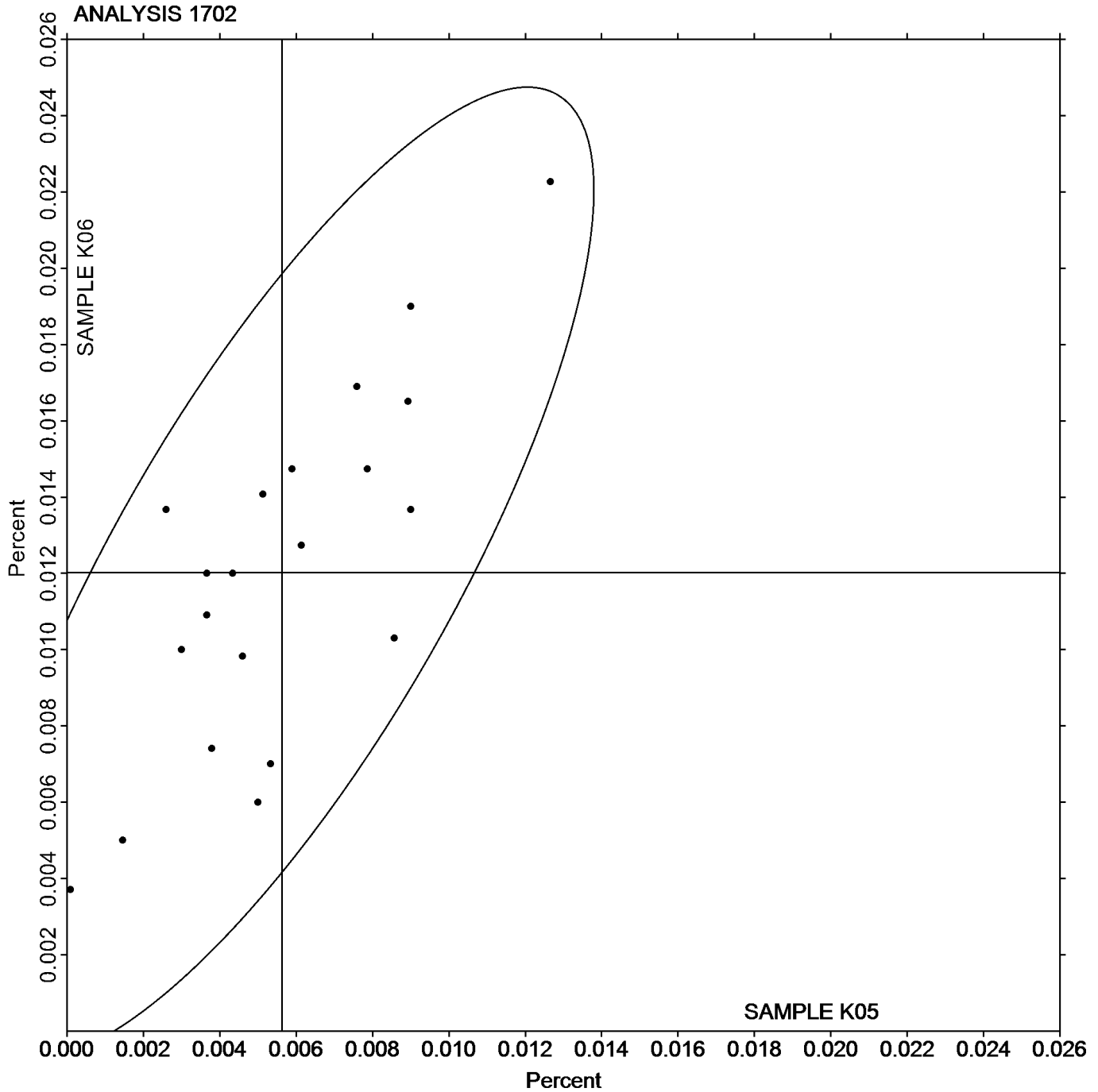
Analysis 1702

Copper-based Alloy, LEAD (Pb)

LEAD (Pb)

SAMPLE K05
0.00564 Percent

SAMPLE K06
0.0120 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1703

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY	X	0.1447	0.0779	17.32	0.1365	0.0809	16.52	OE
3Z463T		0.0767	0.0098	2.18	0.0683	0.0127	2.60	OE
6TEAFE		0.0689	0.0020	0.45	0.0587	0.0031	0.63	IC
6W2BRZ		0.0627	-0.0042	-0.93	0.0543	-0.0013	-0.26	OE
8MMJ8P		0.0642	-0.0026	-0.59	0.0537	-0.0019	-0.39	OE
9B3ULN		0.0683	0.0015	0.33	0.0557	0.0001	0.01	OE
ADDHPR		0.0581	-0.0088	-1.95	0.0435	-0.0121	-2.47	OE
AU2V76		0.0637	-0.0032	-0.71	0.0533	-0.0023	-0.46	OE
AYQBTQ	X	0.1527	0.0858	19.09	0.1450	0.0894	18.26	OE
BG6K3K		0.0660	-0.0009	-0.19	0.0550	-0.0006	-0.12	OE
CG77J4		0.0657	-0.0012	-0.27	0.0560	0.0004	0.08	OE
GUNDVZ		0.0629	-0.0040	-0.89	0.0514	-0.0042	-0.85	IC
HJTTGY		0.0771	0.0102	2.27	0.0579	0.0023	0.46	AA
KE9NXU		0.0663	-0.0005	-0.12	0.0553	-0.0003	-0.05	IC
L9384Z		0.0672	0.0003	0.07	0.0567	0.0011	0.23	OE
N33YB2		0.0690	0.0021	0.48	0.0610	0.0054	1.10	OE
Q2XUJR		0.0699	0.0030	0.67	0.0533	-0.0023	-0.47	DR
QF3KMQ		0.0633	-0.0035	-0.79	0.0500	-0.0056	-1.14	IC
QNBLJ7		0.0697	0.0028	0.63	0.0589	0.0033	0.68	IC
WFM7NV		0.0650	-0.0019	-0.41	0.0550	-0.0006	-0.12	OE
XKBBWP		0.0670	0.0001	0.03	0.0557	0.0001	0.01	OE
XR8J9X		0.0701	0.0032	0.72	0.0617	0.0061	1.24	OE
YT6EZL	X	0.1106	0.0437	9.72	0.0967	0.0411	8.39	IC
ZPR26J		0.0625	-0.0044	-0.98	0.0521	-0.0035	-0.71	OE

Summary Statistics		Sample K05		Sample K06	
Grand Means		0.0669	Percent	0.0556	Percent
Stnd Dev Brwn Labs		0.0045	Percent	0.0049	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 21 of 24 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- DR Spectrometry - Direct Reading OE (DROES)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)

Comments on Assigned Data Flags for Test #1703

- 3EQKWY (X) - Extreme data.
- AYQBTQ (X) - Extreme data.
- YT6EZL (X) - Data for both samples are high. Possible Systematic Error.



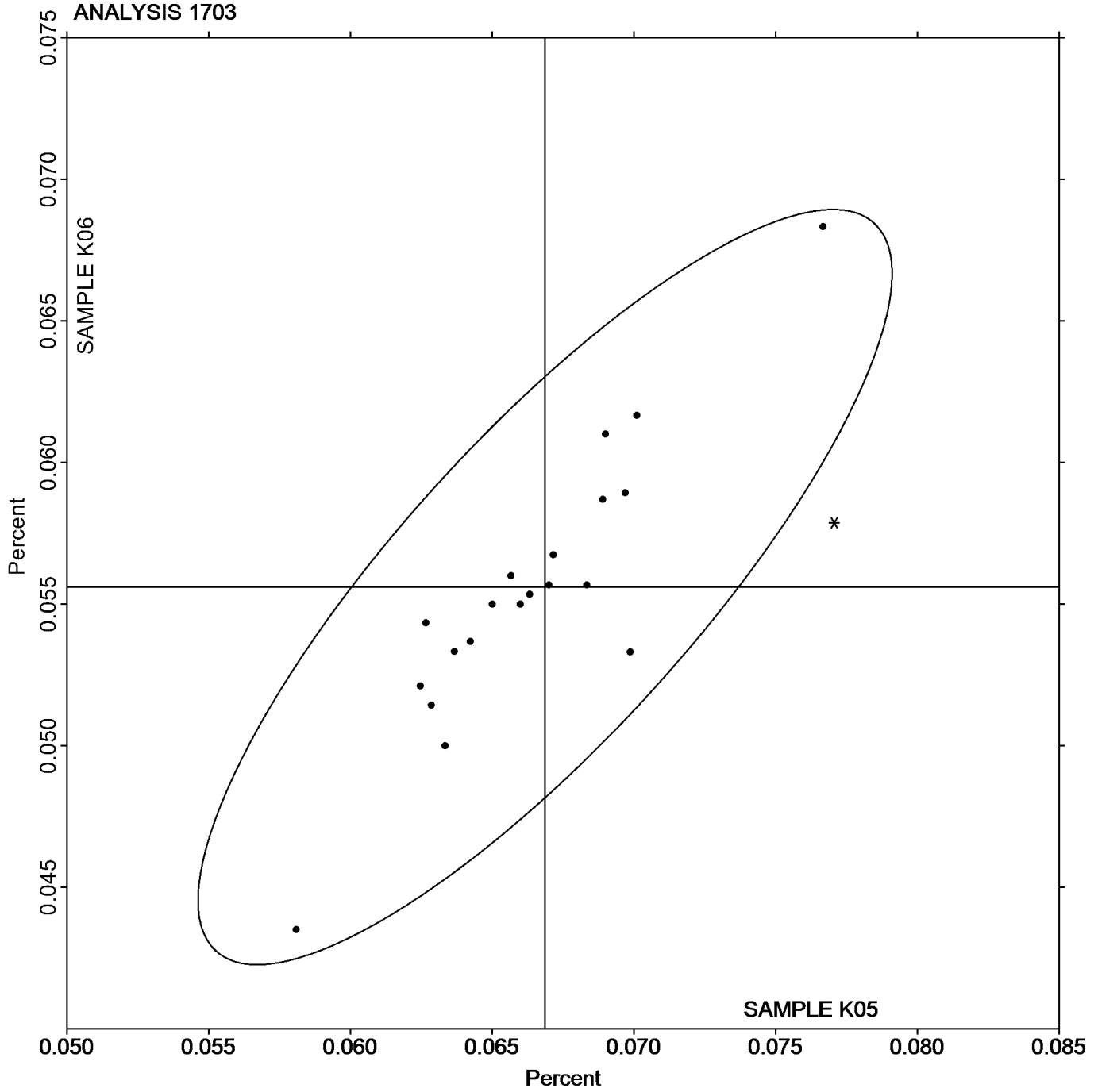
Analysis 1703

Copper-based Alloy, ZINC (Zn)

ZINC (Zn)

SAMPLE K05
0.0669 Percent

SAMPLE K06
0.0556 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1704

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY		3.488	-0.135	-0.90	3.579	-0.196	-1.02	OE
3Z463T		3.544	-0.079	-0.53	3.602	-0.173	-0.90	OE
6TEAFE		3.620	-0.003	-0.02	3.693	-0.081	-0.42	IC
6W2BRZ		3.547	-0.076	-0.50	3.654	-0.120	-0.63	OE
8A3QLU		3.920	0.297	1.98	4.167	0.392	2.04	OE
8MMJ8P		3.663	0.041	0.27	3.857	0.082	0.43	OE
9B3ULN		3.618	-0.005	-0.03	3.788	0.013	0.07	OE
ADDHPR	*	4.061	0.438	2.91	4.320	0.546	2.84	OE
AU2V76		3.651	0.029	0.19	3.865	0.091	0.47	OE
AYQBTQ		3.234	-0.389	-2.59	3.290	-0.484	-2.52	OE
BG6K3K		3.703	0.080	0.53	3.854	0.080	0.41	OE
CG77J4		3.680	0.057	0.38	3.850	0.076	0.39	OE
GUNDVZ		3.677	0.054	0.36	3.766	-0.008	-0.04	IC
HJTTGY		3.590	-0.033	-0.22	3.807	0.032	0.17	AA
KE9NXU		3.523	-0.099	-0.66	3.653	-0.121	-0.63	IC
L9384Z		3.634	0.012	0.08	3.765	-0.010	-0.05	OE
N33YB2		3.696	0.074	0.49	3.810	0.036	0.19	OE
Q2XUJR		3.600	-0.022	-0.15	3.789	0.014	0.07	DR
QF3KMQ		3.607	-0.016	-0.11	3.753	-0.021	-0.11	IC
QNBLJ7		3.505	-0.117	-0.78	3.629	-0.146	-0.76	IC
WFM7NV		3.643	0.020	0.14	3.869	0.095	0.49	OE
XKBBWP		3.553	-0.069	-0.46	3.727	-0.048	-0.25	OE
XR8J9X		3.660	0.037	0.25	3.847	0.072	0.38	OE
YT6EZL		3.466	-0.157	-1.04	3.616	-0.158	-0.82	IC
ZPR26J		3.683	0.061	0.40	3.810	0.036	0.19	OE

Summary Statistics						
	Sample K05			Sample K06		
Grand Means	3.623	Percent		3.774	Percent	
Stnd Dev Btrwn Labs	0.150	Percent		0.192	Percent	

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 25 of 25 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- DR Spectrometry - Direct Reading OE (DROES)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)



Analysis 1704

Copper-based Alloy, IRON (Fe)

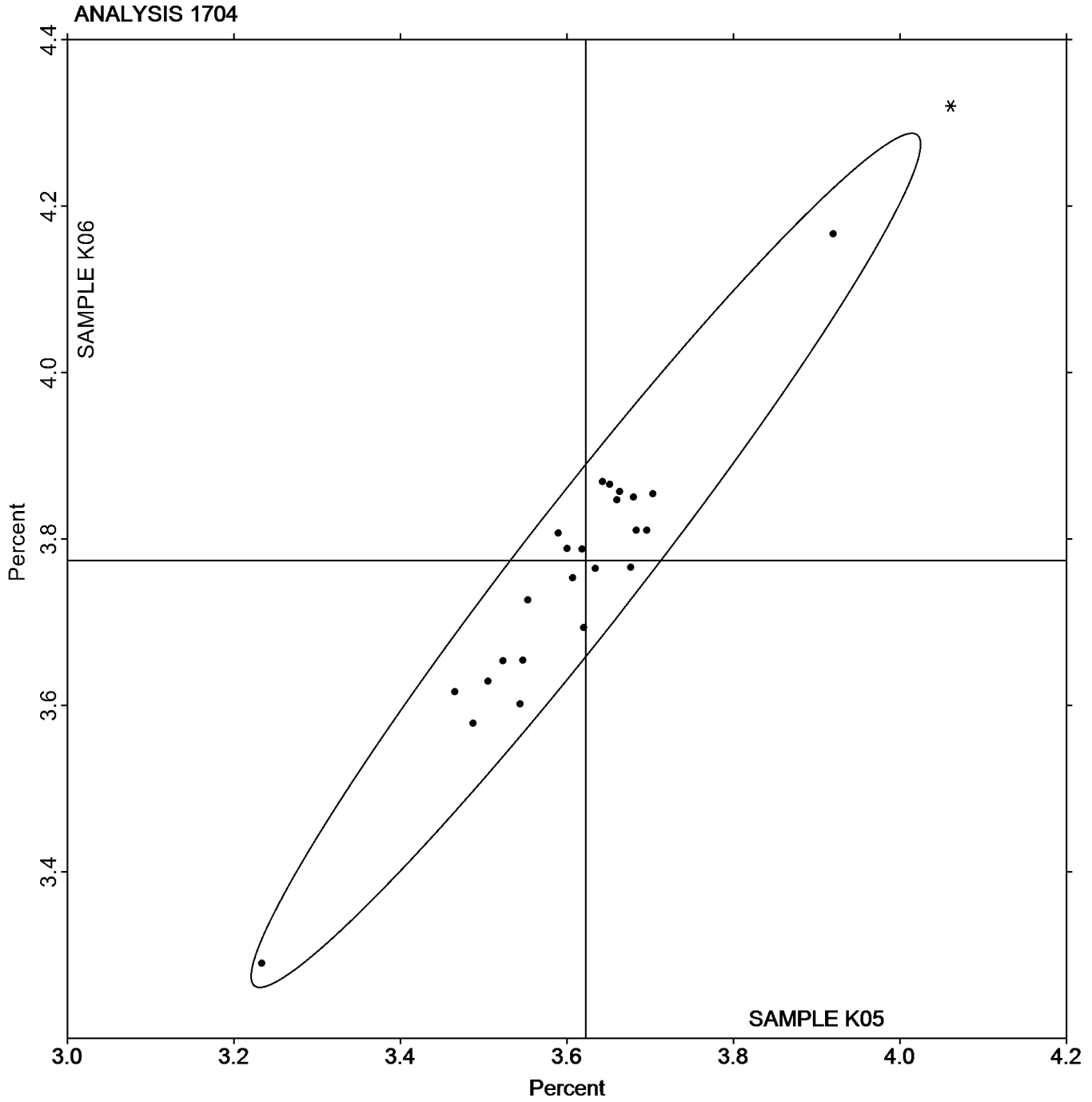
IRON (Fe)

SAMPLE K05

SAMPLE K06

3.623 Percent

3.774 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1705

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY		4.919	0.055	0.44	4.202	-0.091	-0.89	OE
3Z463T		4.727	-0.138	-1.10	4.348	0.056	0.55	OE
6TEAFE		4.740	-0.125	-1.00	4.170	-0.123	-1.20	IC
6W2BRZ		4.856	-0.009	-0.07	4.265	-0.027	-0.27	OE
8A3QLU	*	5.193	0.329	2.63	4.590	0.297	2.91	OE
8MMJ8P		4.880	0.015	0.12	4.263	-0.029	-0.29	OE
9B3ULN		4.933	0.068	0.55	4.312	0.020	0.19	OE
ADDHPR	X	3.331	-1.533	-12.28	2.790	-1.503	-14.71	OE
AU2V76		4.894	0.029	0.23	4.368	0.075	0.74	OE
AYQBTQ		4.859	-0.006	-0.05	4.253	-0.039	-0.38	OE
BG6K3K		4.798	-0.067	-0.53	4.251	-0.042	-0.41	OE
CG77J4		4.980	0.115	0.92	4.300	0.007	0.07	OE
GUNDVZ		4.854	-0.010	-0.08	4.303	0.010	0.10	IC
HJTTGY		4.930	0.065	0.52	4.423	0.131	1.28	AA
KE9NXU		4.763	-0.101	-0.81	4.153	-0.139	-1.36	IC
L9384Z		4.860	-0.004	-0.04	4.304	0.012	0.12	OE
N33YB2		5.020	0.156	1.25	4.389	0.096	0.94	OE
Q2XUJR	*	4.709	-0.156	-1.25	4.392	0.099	0.97	DR
QF3KMQ		4.943	0.079	0.63	4.323	0.031	0.30	IC
QNBLJ7		4.546	-0.319	-2.55	4.095	-0.198	-1.94	IC
WFM7NV		4.885	0.020	0.16	4.337	0.044	0.43	OE
XKBBWP		4.900	0.035	0.28	4.277	-0.016	-0.16	OE
XR8J9X		4.920	0.055	0.44	4.253	-0.039	-0.38	OE
YT6EZL		4.750	-0.114	-0.92	4.174	-0.119	-1.16	IC
ZPR26J		4.890	0.025	0.20	4.277	-0.016	-0.16	OE

Summary Statistics

	Sample K05		Sample K06	
Grand Means	4.865	Percent	4.293	Percent
Stnd Dev Btrwn Labs	0.125	Percent	0.102	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 24 of 25 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- DR Spectrometry - Direct Reading OE (DROES)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)

Comments on Assigned Data Flags for Test #1705

ADDHPR (X) - Data for both samples are low. Inconsistent within the determinations of sample K06.



Analysis 1705

Copper-based Alloy, NICKEL (Ni)

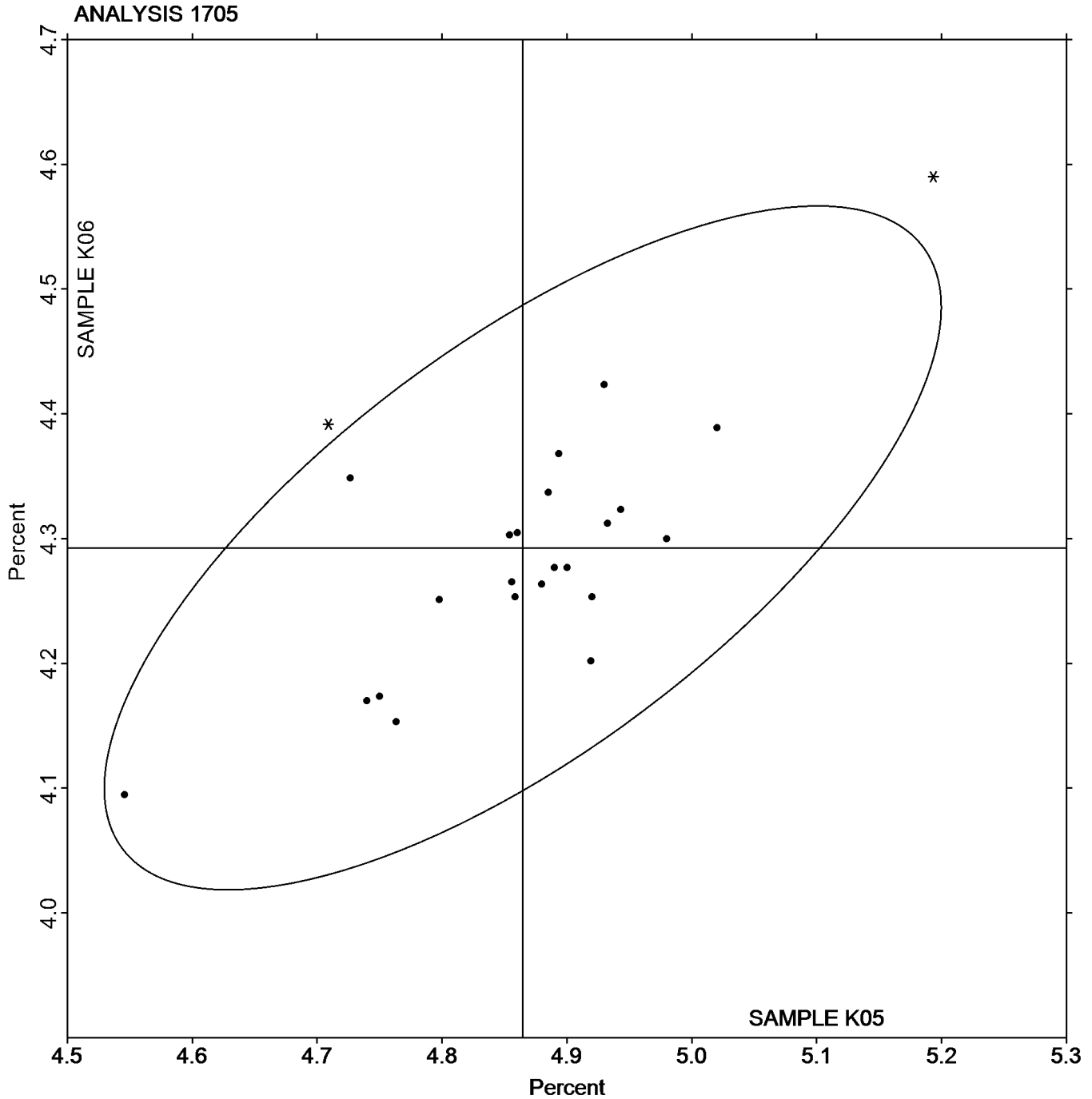
NICKEL (Ni)

SAMPLE K05

SAMPLE K06

4.865 Percent

4.293 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1708

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY		9.850	-0.007	-0.04	10.45	0.06	0.29	OE
3Z463T		9.893	0.036	0.19	10.30	-0.09	-0.39	OE
6TEAFE		10.03	0.170	0.91	10.66	0.27	1.23	IC
6W2BRZ		9.879	0.022	0.12	10.36	-0.03	-0.15	OE
8A3QLU		9.520	-0.337	-1.81	9.857	-0.53	-2.42	OE
8MMJ8P		9.873	0.016	0.09	10.44	0.05	0.23	OE
9B3ULN		9.932	0.075	0.40	10.59	0.20	0.90	OE
ADDHPR		9.741	-0.116	-0.62	10.27	-0.12	-0.55	OE
AU2V76		9.947	0.090	0.48	10.35	-0.04	-0.16	OE
BG6K3K		9.916	0.059	0.32	10.43	0.04	0.19	OE
CG77J4		9.750	-0.107	-0.57	10.39	0.00	0.01	OE
GUNDVZ		9.897	0.040	0.21	10.39	0.00	0.01	IC
HJTTGY		9.423	-0.434	-2.32	9.943	-0.45	-2.02	AA
KE9NXU		9.510	-0.347	-1.86	10.02	-0.37	-1.66	IC
L9384Z		9.896	0.038	0.21	10.42	0.03	0.16	OE
N33YB2		10.03	0.176	0.94	10.64	0.25	1.13	OE
Q2XUJR		9.971	0.114	0.61	10.51	0.12	0.56	DR
QF3KMQ		9.877	0.020	0.10	10.43	0.04	0.17	IC
QNBLJ7	*	9.386	-0.471	-2.52	10.22	-0.17	-0.76	IC
WFM7NV		9.775	-0.082	-0.44	10.31	-0.08	-0.36	OE
XKBBWP		9.867	0.010	0.05	10.41	0.02	0.10	OE
XR8J9X		9.973	0.116	0.62	10.45	0.06	0.26	OE
YT6EZL		10.31	0.451	2.42	10.85	0.46	2.08	IC
ZPR26J		9.857	0.000	0.00	10.48	0.09	0.40	OE

Summary Statistics				
	Sample K05		Sample K06	
Grand Means	9.857	Percent	10.39	Percent
Stnd Dev Brwn Labs	0.187	Percent	0.22	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 23 of 24 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- DR Spectrometry - Direct Reading OE (DROES)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)



Analysis 1708

Copper-based Alloy, ALUMINUM (Al)

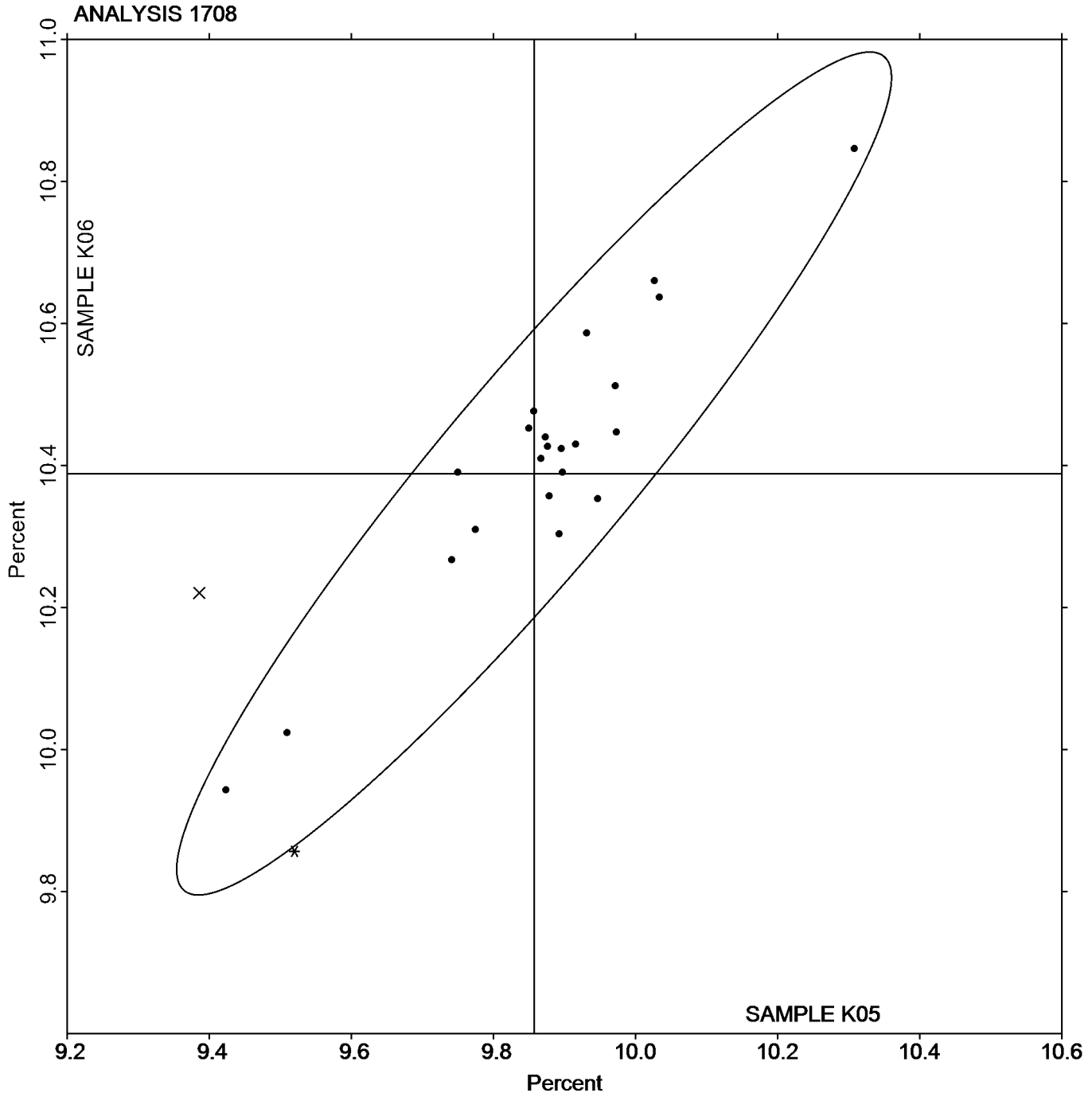
ALUMINUM (Al)

SAMPLE K05

SAMPLE K06

9.857 Percent

10.39 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1710

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY	X	0.7348	0.0184	1.08	0.1560	0.0736	8.80	OE
3Z463T		0.7053	-0.0111	-0.65	0.0770	-0.0054	-0.65	OE
6TEAFE		0.7213	0.0049	0.29	0.0907	0.0083	0.99	IC
6W2BRZ	X	0.5797	-0.1368	-8.03	0.0903	0.0079	0.94	OE
8A3QLU	*	0.7007	-0.0158	-0.93	0.0573	-0.0251	-3.01	OE
8MMJ8P	M	0.7453	0.0289	1.70	No Data Reported			OE
9B3ULN		0.7167	0.0002	0.01	0.0850	0.0026	0.31	OE
ADDHPR		0.7392	0.0227	1.34	0.0798	-0.0026	-0.31	OE
AU2V76		0.6973	-0.0191	-1.12	0.0973	0.0149	1.78	OE
AYQBTQ	X	0.2120	-0.5044	-29.63	0.0657	-0.0168	-2.01	OE
BG6K3K		0.7040	-0.0124	-0.73	0.0910	0.0086	1.02	OE
CG77J4		0.7200	0.0036	0.21	0.0800	-0.0024	-0.29	OE
GUNDVZ		0.7141	-0.0024	-0.14	0.0841	0.0017	0.20	IC
HJTTGY		0.7193	0.0029	0.17	0.0886	0.0061	0.73	AA
KE9NXU		0.7097	-0.0068	-0.40	0.0837	0.0012	0.15	IC
L9384Z		0.7296	0.0131	0.77	0.0800	-0.0025	-0.30	OE
N33YB2		0.6917	-0.0248	-1.45	0.0863	0.0039	0.47	OE
Q2XUJR	*	0.7647	0.0482	2.83	0.0837	0.0012	0.15	DR
QF3KMQ		0.7300	0.0136	0.80	0.0800	-0.0024	-0.29	IC
QNBLJ7		0.6922	-0.0242	-1.42	0.0861	0.0037	0.44	IC
WFM7NV		0.7190	0.0026	0.15	0.0770	-0.0054	-0.65	OE
XKBBWP	X	0.7300	0.0136	0.80	0.7233	0.6409	76.71	OE
XR8J9X		0.7233	0.0069	0.41	0.0853	0.0029	0.35	OE
YT6EZL		0.7208	0.0044	0.26	0.0856	0.0032	0.38	IC
ZPR26J		0.7097	-0.0068	-0.40	0.0702	-0.0123	-1.47	OE

Summary Statistics		Sample K05		Sample K06	
Grand Means		0.7164	Percent	0.0824	Percent
Stnd Dev Btrwn Labs		0.0170	Percent	0.0084	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 20 of 25 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- DR Spectrometry - Direct Reading OE (DROES)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)

Comments on Assigned Data Flags for Test #1710

- 3EQKWY (X) - Data for sample K06 are high.
- 6W2BRZ (X) - Data for sample K05 are low.
- 8MMJ8P (M) - Participant did not submit data for sample K06.
- AYQBTQ (X) - Data for sample K05 are extreme.
- XKBBWP (X) - Data for sample K06 are extreme.



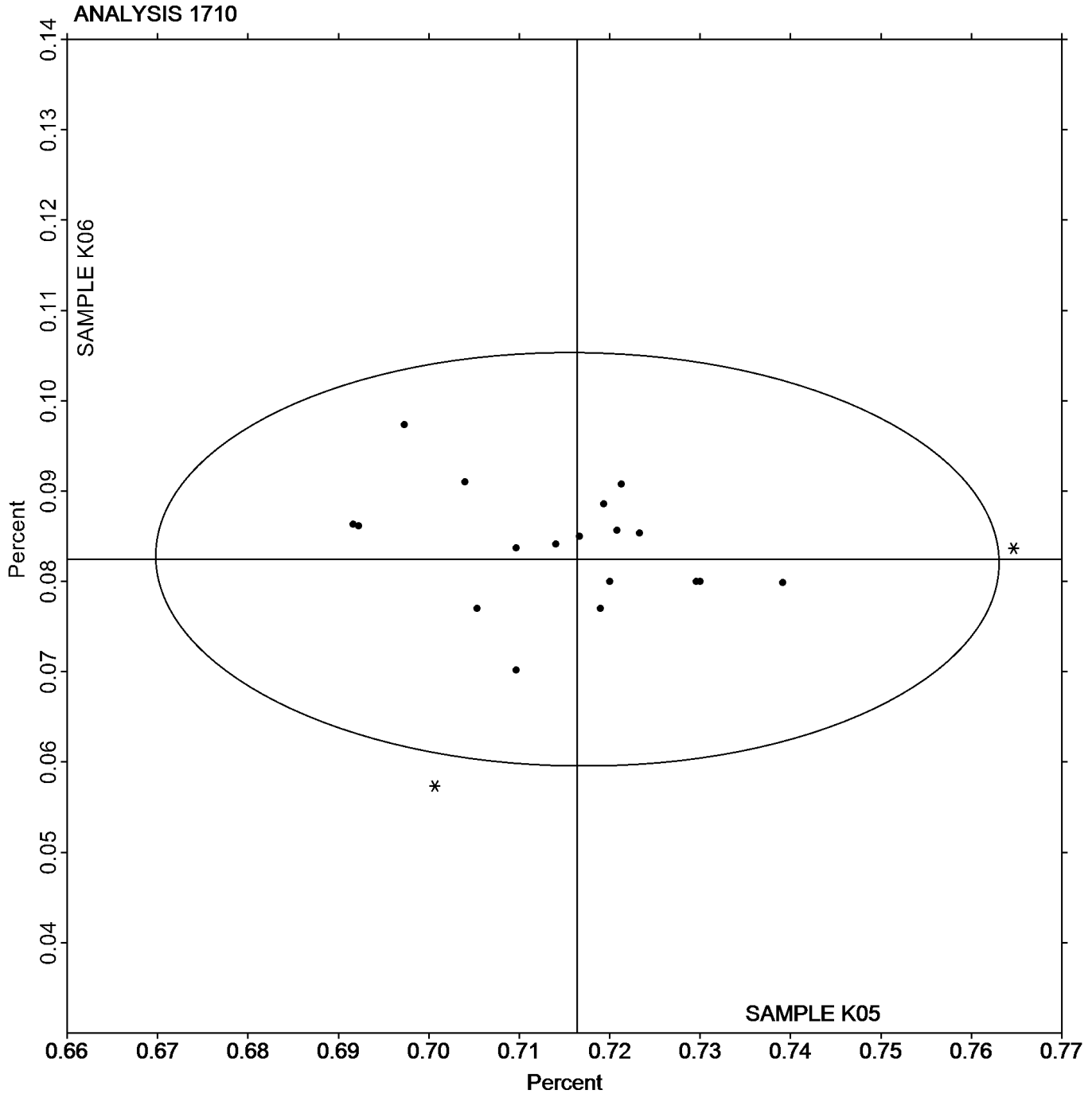
Analysis 1710

Copper-based Alloy, MANGANESE (Mn)

MANGANESE (Mn)

SAMPLE K05
0.7164 Percent

SAMPLE K06
0.0824 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 148
4th Qtr 2024

Analysis 1711

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

WebCode	Data Flag	Sample K05			Sample K06			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3EQKWY		0.0277	0.0007	0.25	0.0254	0.0005	0.20	OE
3Z463T	*	0.0216	-0.0054	-2.08	0.0183	-0.0067	-2.94	OE
6TEAFE	*	0.0254	-0.0016	-0.63	0.0288	0.0038	1.68	IC
6W2BRZ		0.0293	0.0023	0.90	0.0253	0.0004	0.17	OE
8A3QLU		0.0267	-0.0003	-0.10	0.0253	0.0004	0.17	OE
8MMJ8P		0.0279	0.0009	0.35	0.0264	0.0014	0.63	OE
9B3ULN		0.0263	-0.0007	-0.26	0.0237	-0.0013	-0.56	OE
AU2V76		0.0278	0.0008	0.32	0.0258	0.0008	0.36	OE
AYQBTQ		0.0260	-0.0010	-0.39	0.0240	-0.0009	-0.42	OE
BG6K3K		0.0276	0.0006	0.23	0.0261	0.0012	0.51	OE
CG77J4		0.0280	0.0010	0.39	0.0270	0.0021	0.90	OE
GUNDVZ		0.0273	0.0003	0.13	0.0268	0.0019	0.83	IC
KE9NXU		0.0260	-0.0010	-0.39	0.0250	0.0001	0.02	IC
L9384Z		0.0251	-0.0019	-0.73	0.0227	-0.0022	-0.97	OE
N33YB2		0.0283	0.0013	0.52	0.0250	0.0001	0.02	OE
Q2XUJR		0.0289	0.0019	0.72	0.0273	0.0023	1.02	DR
QF3KMQ	*	0.0333	0.0063	2.44	0.0267	0.0017	0.76	IC
QNBLJ7		0.0311	0.0041	1.58	0.0255	0.0006	0.24	IC
WFM7NV		0.0271	0.0001	0.04	0.0251	0.0002	0.07	OE
XKBBWP		0.0220	-0.0050	-1.93	0.0207	-0.0043	-1.88	OE
XR8J9X		0.0246	-0.0024	-0.91	0.0233	-0.0016	-0.71	OE
ZPR26J		0.0258	-0.0012	-0.46	0.0247	-0.0003	-0.12	OE

Summary Statistics

	Sample K05		Sample K06	
Grand Means	0.0270	Percent	0.0249	Percent
Stnd Dev Btwn Labs	0.0026	Percent	0.0023	Percent

Samples K05, K06 : CDA 630, CDA 630

Statistics based on 22 of 22 reporting participants

Key to Method Codes Reported by Participants

- DR Spectrometry - Direct Reading OE (DROES)
- OE Spectrometry - Optical Emission (OES)
- IC Spectrometry - Inductively Coupled Plasma (ICP)



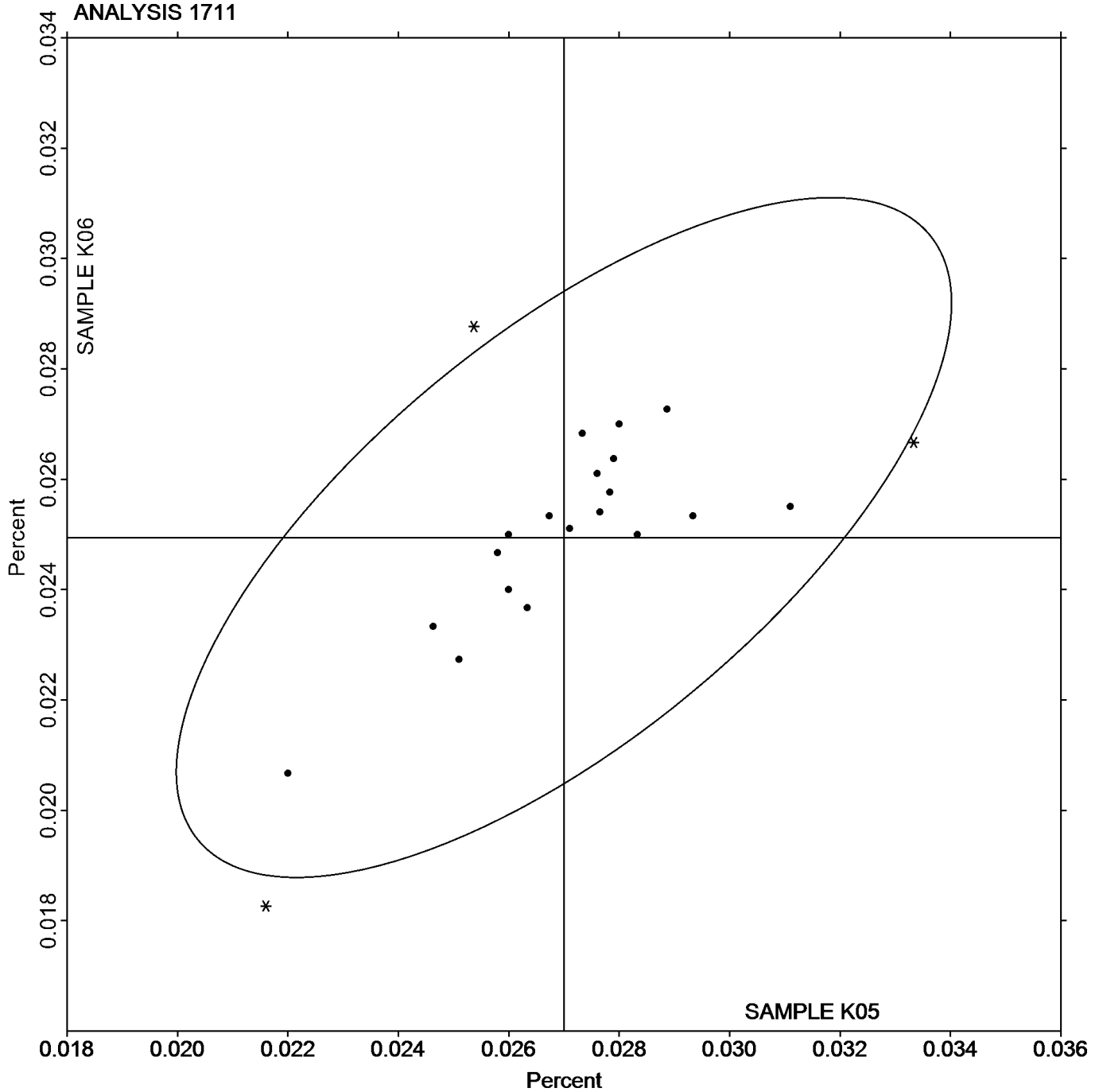
Analysis 1711

Copper-based Alloy, SILICON (Si)

SILICON (Si)

SAMPLE K05
0.0270 Percent

SAMPLE K06
0.0249 Percent





Analysis 1711

Copper-based Alloy, SILICON (Si)

SILICON (Si)

-End of Report-