

Fasteners & Metals Interlaboratory Testing Program

Summary Report Cycle 140, 4th Qtr 2022

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<u>Analysis</u>	<u>Test Group</u>
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Impact Tests	
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1004	Charpy V-Notch (Room Temperature)
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Tensile Tests	
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1131	Tensile Strength: Lab-Machined Flat Steel
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1132	Yield Strength: Lab-Machined Flat Steel
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1133	Elongation: Lab-Machined Flat Steel
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1134	r-Value: Lab-Machined Flat Steel
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1135	n-Value: Lab-Machined Flat Steel
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Fasteners	
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1201	Fastener Wedge Tensile (10 degree)
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1202	Fastener Axial Tensile
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1203	Fastener Wedge Tensile (10 degree) - Metric
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1204	Fastener Axial Tensile - Metric
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1210	Rockwell Hardness: Externally Threaded Fasteners
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1211	Vickers Hardness: Externally Threaded Fasteners
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1220	Fastener Double Shear
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Hardness / Metallography Tests	
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1303	Rockwell Hardness: C Scale
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1311	Vickers Hardness 10 kgf
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1341	Brinell Hardness
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1351	Rockwell Superficial Hardness (30N Scale)
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1401	Total Case Depth
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1402	Effective Case Depth
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1412	Grain Size (Inconel)
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Chemical Analyses	
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1640 - 1652	Chemical Analysis: Corrosion Resistant Steel
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1700 - 1712	Chemical Analysis: Copper-based Alloy
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ABOUT THE FASTENERS & METALS PROGRAM

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

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

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

ABOUT CTS

Founded in 1971, CTS is a privately-owned company that specializes in interlaboratory tests for a wide variety of industries, including rubber, plastics, fasteners and metals, containerboard, paper, color, 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 50 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 140
4th Qtr 2022

Analysis 1004

Charpy V-Notch (Room Temperature)
ASTM E23

WebCode	Data Flag	Sample U87			Sample U88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
47BG3Z		31.17	-0.42	-0.19	30.31	-0.86	-0.40
AKVVU4	*	34.45	2.86	1.31	30.37	-0.80	-0.38
C6QFL6		30.28	-1.31	-0.60	29.83	-1.34	-0.63
CXWZEY	*	38.33	6.74	3.08	37.33	6.17	2.91
EGGY9M		33.00	1.41	0.64	31.00	-0.17	-0.08
F8BCZL		31.90	0.31	0.14	33.03	1.87	0.88
FTBEXN		29.79	-1.80	-0.82	30.16	-1.01	-0.48
FXYEMP		29.67	-1.92	-0.88	30.00	-1.17	-0.55
HWZLB4		32.67	1.08	0.49	33.33	2.17	1.02
KJKRL8		31.67	0.08	0.03	30.33	-0.83	-0.39
L9XVDE		33.25	1.66	0.76	32.13	0.96	0.45
LZQ2DK		30.33	-1.26	-0.57	29.67	-1.50	-0.71
M8Z2TF		28.17	-3.42	-1.56	28.74	-2.42	-1.14
MW7EBY		30.22	-1.37	-0.62	27.79	-3.37	-1.59
NZZZCL		29.67	-1.92	-0.88	30.67	-0.50	-0.24
QEWNNC		32.15	0.56	0.25	33.09	1.93	0.91
R6GLG3		29.33	-2.26	-1.03	28.00	-3.17	-1.49
T4L9NH		28.67	-2.92	-1.33	29.67	-1.50	-0.71
TW3AT3		33.33	1.74	0.80	31.00	-0.17	-0.08
UJQAGW		31.55	-0.04	-0.02	30.48	-0.69	-0.32
V4YGUN		31.93	0.34	0.16	32.27	1.10	0.52
WVZFQF		32.77	1.18	0.54	32.63	1.47	0.69
WZBGRZ		33.13	1.54	0.70	32.97	1.80	0.85
XYT3L3		29.33	-2.26	-1.03	30.00	-1.17	-0.55
YRBQE2		33.00	1.41	0.64	34.33	3.17	1.50

Summary Statistics

	Sample U87		Sample U88	
Grand Means	31.59	Joule	31.17	Joule
Std Dev Btrwn Labs	2.19	Joule	2.12	Joule

Samples U87, U88 : AISI 4340, AISI 4340

Statistics based on 25 of 25 reporting participants



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
26QTRA		66.10	-1.16	-1.28	70.40	-1.24	-1.00
2X8KA6		67.30	0.04	0.05	71.36	-0.28	-0.23
37G48W	X	63.89	-3.37	-3.74	67.69	-3.95	-3.18
37GAM4	X	66.60	-0.66	-0.73	67.80	-3.84	-3.09
3M88VQ		65.90	-1.36	-1.51	70.10	-1.54	-1.24
4CF6V2		68.81	1.55	1.72	74.27	2.63	2.12
4XJQQT		67.80	0.54	0.60	72.90	1.26	1.02
4ZMKMD		66.90	-0.36	-0.40	71.00	-0.64	-0.52
6NCJJ6		66.33	-0.93	-1.03	70.65	-0.99	-0.80
6QZVKW		67.50	0.24	0.27	72.70	1.06	0.85
8BDKN6		67.10	-0.16	-0.18	70.24	-1.40	-1.13
8R3HVT		67.40	0.14	0.16	71.00	-0.64	-0.52
A7XQNP		67.81	0.56	0.62	72.70	1.06	0.85
APAHKZ		68.50	1.24	1.38	72.10	0.46	0.37
AWMM86		66.90	-0.36	-0.40	72.05	0.41	0.33
AYCXDQ		67.78	0.52	0.58	72.34	0.69	0.56
BDUPV6		67.10	-0.16	-0.17	71.00	-0.64	-0.52
C2BVWG		67.30	0.04	0.05	71.88	0.24	0.19
CAL66X		66.48	-0.78	-0.87	70.17	-1.47	-1.18
D3ZG2E		67.52	0.27	0.29	71.30	-0.34	-0.27
D4X2L7	X	68.30	1.04	1.16	71.00	-0.64	-0.52
DBVDX3		66.94	-0.32	-0.35	72.43	0.79	0.64
DD4L8M		66.10	-1.16	-1.28	70.80	-0.84	-0.68
DTVNCK	*	69.60	2.34	2.60	74.60	2.96	2.38
DVLF2J		66.00	-1.26	-1.40	69.90	-1.74	-1.40
DY28RC		66.40	-0.86	-0.95	69.80	-1.84	-1.48
EGGY9M		67.44	0.19	0.21	70.92	-0.72	-0.58
FFKM9D		68.58	1.32	1.47	73.56	1.92	1.55
FJJ2RW	*	66.28	-0.97	-1.08	68.89	-2.75	-2.21
FJZDCM		68.90	1.64	1.83	73.20	1.56	1.26
FNJ33R		67.73	0.48	0.53	71.88	0.24	0.19
FTBEXN		66.78	-0.47	-0.53	71.21	-0.43	-0.35
FUG4U6		66.61	-0.65	-0.72	70.58	-1.06	-0.85
G79U9G	X	59.32	-7.94	-8.82	65.85	-5.79	-4.67
GE4ZZX		68.78	1.52	1.69	74.08	2.44	1.97
GGC2BW		66.80	-0.46	-0.51	71.70	0.06	0.05
GPJQTN		66.80	-0.46	-0.51	71.60	-0.04	-0.03
GPJRPR		66.80	-0.46	-0.51	70.60	-1.04	-0.84
GT7EBT	X	63.38	-3.87	-4.30	67.15	-4.49	-3.62
HCPXGH		65.85	-1.41	-1.57	70.05	-1.59	-1.28
HEYV4K		67.33	0.07	0.08	72.04	0.40	0.32
HH3N3Q		66.70	-0.56	-0.62	71.20	-0.44	-0.35
HL2YXQ		67.40	0.14	0.16	71.90	0.26	0.21
HX932L	X	71.30	4.04	4.49	76.80	5.16	4.16
HZHVHT		67.70	0.44	0.49	72.40	0.76	0.61
JERAMV		67.51	0.25	0.28	72.70	1.06	0.85
JLCAEG		67.12	-0.14	-0.15	71.06	-0.58	-0.47



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
JPBPLJ		66.46	-0.80	-0.89	69.71	-1.94	-1.56
JTDF6Q		68.10	0.84	0.94	73.10	1.46	1.18
JYMMTA		66.89	-0.36	-0.40	71.36	-0.28	-0.23
KEWZHK	X	69.60	2.34	2.60	72.50	0.86	0.69
KKF4PM	X	65.70	-1.55	-1.73	73.39	1.75	1.41
KKW6GH		65.80	-1.46	-1.62	70.20	-1.44	-1.16
KKZYWG		67.72	0.47	0.52	72.78	1.13	0.91
KLCGCF		68.50	1.24	1.38	72.30	0.66	0.53
KRU7AG		67.38	0.13	0.14	71.28	-0.36	-0.29
KTRCVH	*	65.00	-2.26	-2.51	69.60	-2.04	-1.64
KX7WYV		67.90	0.64	0.72	71.60	-0.04	-0.03
L7AGJQ		66.34	-0.92	-1.02	69.73	-1.91	-1.54
L88RFT		67.50	0.24	0.27	72.30	0.66	0.53
LCVGTB		67.59	0.33	0.37	72.37	0.73	0.59
LZQ2DK		67.44	0.18	0.20	72.06	0.42	0.34
M4Y2LH		69.00	1.74	1.94	73.60	1.96	1.58
M789QW		67.28	0.02	0.03	71.42	-0.22	-0.17
MCY9MP		67.00	-0.26	-0.28	71.30	-0.34	-0.27
MTFMHF		69.20	1.94	2.16	74.10	2.46	1.98
N2VD77		66.60	-0.66	-0.73	71.80	0.16	0.13
N8ZGL7	X	71.70	4.44	4.94	77.60	5.96	4.80
NCBF4E		67.10	-0.16	-0.17	72.40	0.76	0.61
NGNF6C		67.73	0.48	0.53	71.65	0.01	0.01
NN6NZ9		67.68	0.42	0.47	71.86	0.22	0.18
NQ8PQK		67.30	0.04	0.05	72.66	1.02	0.83
NT33UP		65.30	-1.96	-2.18	68.69	-2.95	-2.38
PEDVUG		68.10	0.84	0.94	73.10	1.46	1.18
PLV3PD		66.90	-0.36	-0.40	71.40	-0.24	-0.19
PRWKND	X	92.74	25.48	28.32	69.92	-1.72	-1.39
QVCKKK	*	64.79	-2.47	-2.74	68.97	-2.68	-2.16
QZ9QE2		68.30	1.04	1.16	72.70	1.06	0.85
RE93BC		67.78	0.52	0.58	71.99	0.35	0.28
RWCCEJ	X	67.11	-0.15	-0.16	69.36	-2.28	-1.84
T2D9CB		67.70	0.44	0.49	71.20	-0.44	-0.35
T2FXF9		66.60	-0.66	-0.73	72.00	0.36	0.29
TEK9Y2		67.30	0.04	0.05	72.52	0.88	0.71
TJKBBG	*	65.00	-2.26	-2.51	68.00	-3.64	-2.93
TXER4M		67.20	-0.06	-0.06	70.60	-1.04	-0.84
U4GDFV		67.59	0.33	0.37	72.01	0.37	0.30
U9UVXD		67.70	0.44	0.49	71.90	0.26	0.21
UA6XJC		67.25	-0.01	-0.01	71.19	-0.45	-0.36
UBYL28	X	77.17	9.91	11.02	87.76	16.12	12.99
UJQAGW		65.22	-2.04	-2.27	69.65	-1.99	-1.60
VFJBJA		67.44	0.19	0.21	71.79	0.15	0.12
VKFUWE		68.50	1.24	1.38	72.50	0.86	0.69
VLV4XR		66.85	-0.41	-0.45	71.95	0.31	0.25
VU93LB		68.02	0.77	0.85	71.79	0.15	0.12



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VUQAP8		66.35	-0.91	-1.01	70.07	-1.57	-1.26
W96R29		67.20	-0.06	-0.06	71.60	-0.04	-0.03
WCL4XP		66.40	-0.86	-0.95	70.20	-1.44	-1.16
WDAQ9E		67.30	0.04	0.05	71.50	-0.14	-0.11
WJMBJJ		67.30	0.04	0.05	71.65	0.01	0.01
WMZZW2		69.40	2.14	2.38	74.60	2.96	2.38
WNXBR4	X	70.75	3.49	3.88	75.68	4.04	3.26
X2H43W		67.12	-0.13	-0.15	71.63	-0.01	0.00
X4PGM7		67.26	0.00	0.00	72.52	0.88	0.71
X66M4U	X	66.74	-0.51	-0.57	66.68	-4.96	-4.00
X7WYKE		68.30	1.04	1.16	73.20	1.56	1.26
XEMH29		67.59	0.33	0.37	71.79	0.15	0.12
XMZFNR		67.90	0.64	0.72	72.30	0.66	0.53
XQ3AQ4		67.40	0.14	0.16	72.50	0.86	0.69
XQKEXG		67.06	-0.20	-0.22	72.56	0.92	0.74
XVPE27		67.40	0.14	0.16	71.90	0.26	0.21
XVQ3K6	X	61.64	-5.61	-6.24	66.81	-4.83	-3.89
XWP6N2		67.70	0.44	0.49	72.40	0.76	0.61
Y2YP77		67.30	0.04	0.05	72.60	0.96	0.77
YEJ7U4		66.36	-0.89	-0.99	70.60	-1.04	-0.84
YQEFJX		67.50	0.24	0.27	71.90	0.26	0.21
YQVPAE		67.56	0.30	0.34	71.90	0.26	0.21
YRBQE2		67.13	-0.13	-0.14	71.61	-0.03	-0.02
YUKRQZ	*	67.24	-0.01	-0.01	69.95	-1.69	-1.36
YY8QR9		68.17	0.91	1.01	72.08	0.44	0.36
ZCN4B9	X	67.85	0.59	0.66	70.13	-1.51	-1.22
ZWJDNW		67.88	0.62	0.69	73.03	1.39	1.12
ZXVBX8		67.08	-0.18	-0.20	71.16	-0.48	-0.39
ZYPYF3		66.80	-0.46	-0.51	71.80	0.16	0.13

Summary Statistics

	Sample F87		Sample F88	
Grand Means	67.26	ksi	71.64	ksi
Std Dev Btwn Labs	0.90	ksi	1.24	ksi

Samples F87, F88 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 107 of 123 reporting participants



Analysis 1131

Tensile Strength: Lab-Machined Flat Steel
ASTM E8

Comments on Assigned Data Flags for Test #1131

- 37G48W (X) - Data for both samples are low.
- 37GAM4 (X) - Data for sample F88 are low.
- D4X2L7 (X) - Inconsistent in testing between samples.
- G79U9G (X) - Data for both samples are low.
- GT7EBT (X) - Data for both samples are low.
- HX932L (X) - Data for both samples are high.
- KEWZHK (X) - Inconsistent in testing between samples.
- KKF4PM (X) - Inconsistent in testing between samples.
- N8ZGL7 (X) - Data for both samples are high.
- PRWKND (X) - Data for sample F87 are extreme.
- RWCCEJ (X) - Inconsistent in testing between samples.
- UBYL28 (X) - Data for both samples are high.
- WNXBR4 (X) - Data for both samples are high.
- X66M4U (X) - Data for sample F88 are low.
- XVQ3K6 (X) - Data for both samples are low.
- ZCN4B9 (X) - Inconsistent in testing between samples.



Analysis 1131

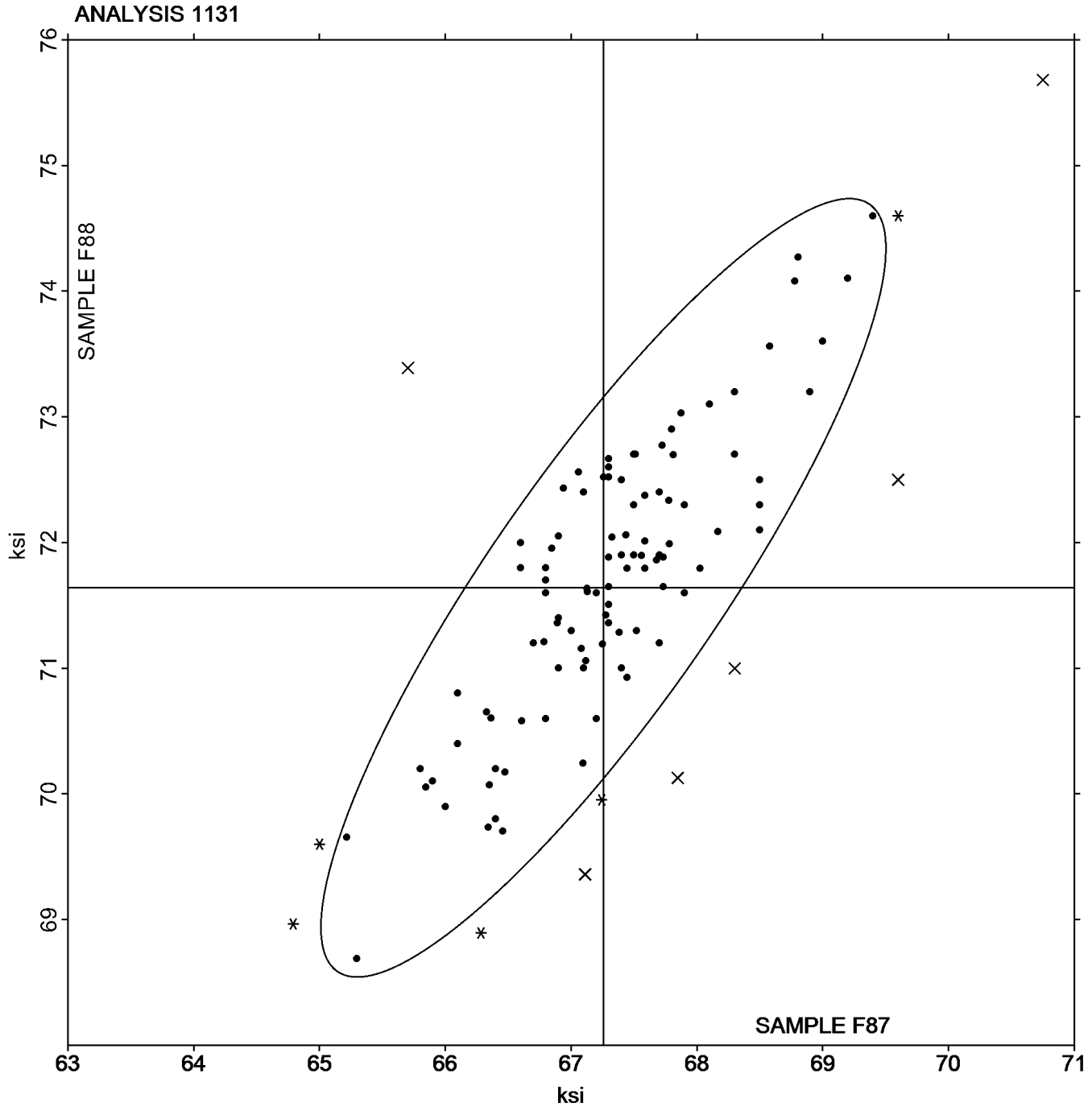
Tensile Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F87

SAMPLE F88

67.26 ksi

71.64 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
26QTRA		47.20	0.23	0.18	55.60	0.36	0.24
2X8KA6		46.85	-0.12	-0.10	55.69	0.46	0.30
37G48W	*	43.92	-3.05	-2.37	55.71	0.47	0.31
37GAM4		45.70	-1.27	-0.99	51.60	-3.64	-2.41
3M88VQ		46.70	-0.27	-0.21	56.30	1.06	0.70
4CF6V2		48.02	1.05	0.82	57.86	2.62	1.74
4XJQQT		47.20	0.23	0.18	56.10	0.86	0.57
4ZMKMD		45.10	-1.87	-1.45	52.80	-2.44	-1.62
6NCJJ6		46.75	-0.22	-0.17	55.95	0.71	0.47
6QZVKW		47.80	0.83	0.64	56.50	1.26	0.84
8BDKN6		47.18	0.21	0.16	53.94	-1.30	-0.86
8R3HVT		46.10	-0.87	-0.68	53.70	-1.54	-1.02
A7XQNP		46.21	-0.76	-0.59	54.82	-0.42	-0.28
APAHKZ		48.80	1.83	1.42	56.50	1.26	0.84
AYCXDQ		47.32	0.35	0.27	52.34	-2.90	-1.92
BDUPV6		47.20	0.23	0.18	54.40	-0.84	-0.56
C2BVWG		44.73	-2.24	-1.74	55.10	-0.14	-0.09
CAL66X		47.26	0.29	0.23	56.26	1.02	0.68
D3ZG2E		47.94	0.97	0.76	54.54	-0.70	-0.46
D4X2L7		48.10	1.13	0.88	54.80	-0.44	-0.29
DBVDX3		47.36	0.39	0.30	58.46	3.22	2.13
DD4L8M		46.80	-0.17	-0.13	54.80	-0.44	-0.29
DTVNCK		47.90	0.93	0.72	57.50	2.26	1.50
DVLF2J		46.20	-0.77	-0.60	54.50	-0.74	-0.49
DY28RC		47.80	0.83	0.64	56.40	1.16	0.77
EGGY9M		46.85	-0.12	-0.10	54.10	-1.14	-0.76
FFKM9D		48.42	1.45	1.13	57.78	2.54	1.68
FJJ2RW		46.99	0.02	0.02	53.81	-1.43	-0.95
FJZDCM	X	59.00	12.03	9.35	57.00	1.76	1.17
FNJ33R		46.70	-0.27	-0.21	55.03	-0.21	-0.14
FTBEXN		46.71	-0.26	-0.20	55.11	-0.13	-0.08
FUG4U6		49.00	2.03	1.58	55.50	0.26	0.17
G79U9G	X	40.61	-6.36	-4.94	50.33	-4.91	-3.25
GGC2BW		45.20	-1.77	-1.38	54.10	-1.14	-0.76
GPJQTN	X	48.10	1.13	0.88	51.50	-3.74	-2.48
GPJRPR		46.60	-0.37	-0.29	54.30	-0.94	-0.62
GT7EBT	*	43.51	-3.46	-2.69	52.21	-3.03	-2.01
HCPXGH	*	46.85	-0.12	-0.10	51.63	-3.61	-2.39
HEYV4K		47.33	0.36	0.28	56.06	0.83	0.55
HH3N3Q		47.20	0.23	0.18	55.90	0.66	0.44
HL2YXQ		47.80	0.83	0.64	55.90	0.66	0.44
HX932L	X	50.70	3.73	2.90	60.50	5.26	3.49
HZHVHT		47.30	0.33	0.26	55.70	0.46	0.31
JERAMV		45.05	-1.92	-1.49	56.20	0.96	0.64
JLCAEG		46.08	-0.89	-0.69	53.65	-1.59	-1.05
JPBPLJ		49.14	2.16	1.68	54.41	-0.83	-0.55
JTDF6Q		47.10	0.13	0.10	56.90	1.66	1.10



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
JYMMTA		46.91	-0.06	-0.04	55.92	0.68	0.45
KEWZHK		47.70	0.73	0.57	55.10	-0.14	-0.09
KKF4PM	*	43.51	-3.46	-2.69	55.40	0.17	0.11
KKW6GH		44.80	-2.17	-1.69	53.50	-1.74	-1.15
KKZYWG		47.43	0.46	0.36	57.08	1.84	1.22
KLCGCF		48.40	1.43	1.11	58.80	3.56	2.36
KRU7AG		46.73	-0.24	-0.18	54.54	-0.70	-0.47
KTRCVH		45.70	-1.27	-0.99	54.20	-1.04	-0.69
KX7WYV		47.20	0.23	0.18	53.70	-1.54	-1.02
L7AGJQ		47.14	0.17	0.13	55.17	-0.07	-0.04
L88RFT		46.00	-0.97	-0.75	55.80	0.56	0.37
LCVGTB		46.41	-0.56	-0.43	55.84	0.60	0.40
LZQ2DK		47.75	0.78	0.61	56.17	0.93	0.62
M4Y2LH		47.70	0.73	0.57	56.60	1.36	0.90
M789QW		46.34	-0.63	-0.49	55.00	-0.24	-0.16
MCY9MP		45.30	-1.67	-1.30	55.40	0.16	0.11
MTFMHF	*	50.60	3.63	2.82	57.60	2.36	1.56
N2VD77		45.60	-1.37	-1.06	57.00	1.76	1.17
N8ZGL7		48.70	1.73	1.34	58.00	2.76	1.83
NCBF4E		47.90	0.93	0.72	56.30	1.06	0.70
NGNF6C		48.73	1.76	1.37	55.55	0.31	0.21
NN6NZ9		48.47	1.50	1.17	53.74	-1.50	-0.99
NQ8PQK		46.41	-0.56	-0.43	56.86	1.62	1.07
NT33UP		45.17	-1.81	-1.40	53.93	-1.31	-0.87
PEDVUG		47.70	0.73	0.57	57.30	2.06	1.37
PLV3PD		47.10	0.13	0.10	55.50	0.26	0.17
PRWKND	X	65.18	18.21	14.15	53.43	-1.81	-1.20
QVCKCK		44.82	-2.15	-1.67	52.70	-2.54	-1.69
QZ9QE2		46.80	-0.17	-0.13	56.20	0.96	0.64
RE93BC		46.79	-0.18	-0.14	55.01	-0.23	-0.15
RWCCEJ		45.18	-1.79	-1.39	54.50	-0.74	-0.49
T2D9CB		49.10	2.13	1.66	54.50	-0.74	-0.49
T2FXF9		48.20	1.23	0.96	56.20	0.96	0.64
TEK9Y2		47.57	0.60	0.47	56.86	1.62	1.07
TJKBBG	*	43.40	-3.57	-2.77	51.90	-3.34	-2.21
TXER4M		45.40	-1.57	-1.22	53.10	-2.14	-1.42
U4GDFV		46.67	-0.30	-0.23	55.58	0.34	0.22
U9UVXD		47.80	0.83	0.64	55.60	0.36	0.24
UA6XJC		46.18	-0.79	-0.61	53.02	-2.22	-1.47
UBYL28	X	57.61	10.64	8.27	72.30	17.06	11.31
UJQAGW		45.46	-1.51	-1.18	52.46	-2.78	-1.84
VFJBJA		46.85	-0.12	-0.10	55.26	0.02	0.01
VKFUWE		49.20	2.23	1.73	56.20	0.96	0.64
VLV4XR		45.31	-1.66	-1.29	53.93	-1.31	-0.87
VU93LB		47.43	0.46	0.36	53.81	-1.43	-0.95
VUQAP8		46.92	-0.05	-0.04	54.83	-0.41	-0.27
W96R29		46.60	-0.37	-0.29	54.50	-0.74	-0.49



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1132

Yield Strength: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
WCL4XP		47.80	0.83	0.64	53.70	-1.54	-1.02
WDAQ9E	*	50.18	3.21	2.50	56.42	1.18	0.78
WJMBJJ		47.28	0.31	0.24	54.53	-0.71	-0.47
WMZZW2		46.40	-0.57	-0.44	56.60	1.36	0.90
WNXBR4	X	50.52	3.55	2.76	60.19	4.95	3.28
X2H43W		46.79	-0.18	-0.14	55.84	0.60	0.40
X4PGM7		47.28	0.31	0.24	58.47	3.23	2.14
X66M4U	X	50.01	3.04	2.36	50.27	-4.97	-3.29
X7WYKE		46.60	-0.37	-0.29	56.80	1.56	1.03
XEMH29		47.28	0.31	0.24	55.99	0.75	0.49
XMZFNR		46.70	-0.27	-0.21	54.20	-1.04	-0.69
XQ3AQ4		48.80	1.83	1.42	57.30	2.06	1.37
XVPE27		49.20	2.23	1.73	56.10	0.86	0.57
XVQ3K6	X	36.26	-10.71	-8.32	47.55	-7.69	-5.09
XWP6N2		47.10	0.13	0.10	55.65	0.41	0.27
Y2YP77		46.40	-0.57	-0.44	55.50	0.26	0.17
YEJ7U4		46.94	-0.03	-0.02	54.70	-0.54	-0.36
YQEFJX		46.90	-0.07	-0.05	53.80	-1.44	-0.95
YQVPAE		47.24	0.27	0.21	55.32	0.08	0.05
YRBQE2		46.80	-0.17	-0.13	55.26	0.02	0.01
YUKRQZ		47.28	0.31	0.24	53.96	-1.28	-0.85
YY8QR9		48.01	1.04	0.81	54.10	-1.14	-0.76
ZCN4B9		47.79	0.82	0.64	53.81	-1.43	-0.95
ZWJDNW		47.00	0.03	0.02	57.20	1.96	1.30
ZXVBX8		47.44	0.47	0.37	53.55	-1.69	-1.12
ZYPYF3		47.40	0.43	0.33	56.20	0.96	0.64

Summary Statistics

	Sample F87		Sample F88	
Grand Means	46.97	ksi	55.24	ksi
Std Dev Btwn Labs	1.29	ksi	1.51	ksi

Samples F87, F88 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 111 of 120 reporting participants



Comments on Assigned Data Flags for Test #1132

- FJZDCM (X) - Data for sample F87 are high.
- G79U9G (X) - Data for both samples are low.
- GPJQTN (X) - Inconsistent in testing between samples.
- HX932L (X) - Data for both samples are high.
- PRWKND (X) - Data for sample F87 are high.
- UBYL28 (X) - Data for both samples are high.
- WNXBR4 (X) - Data for sample F88 are high.
- X66M4U (X) - Data for sample F88 are low.
- XVQ3K6 (X) - Data for both samples are low.



Analysis 1132

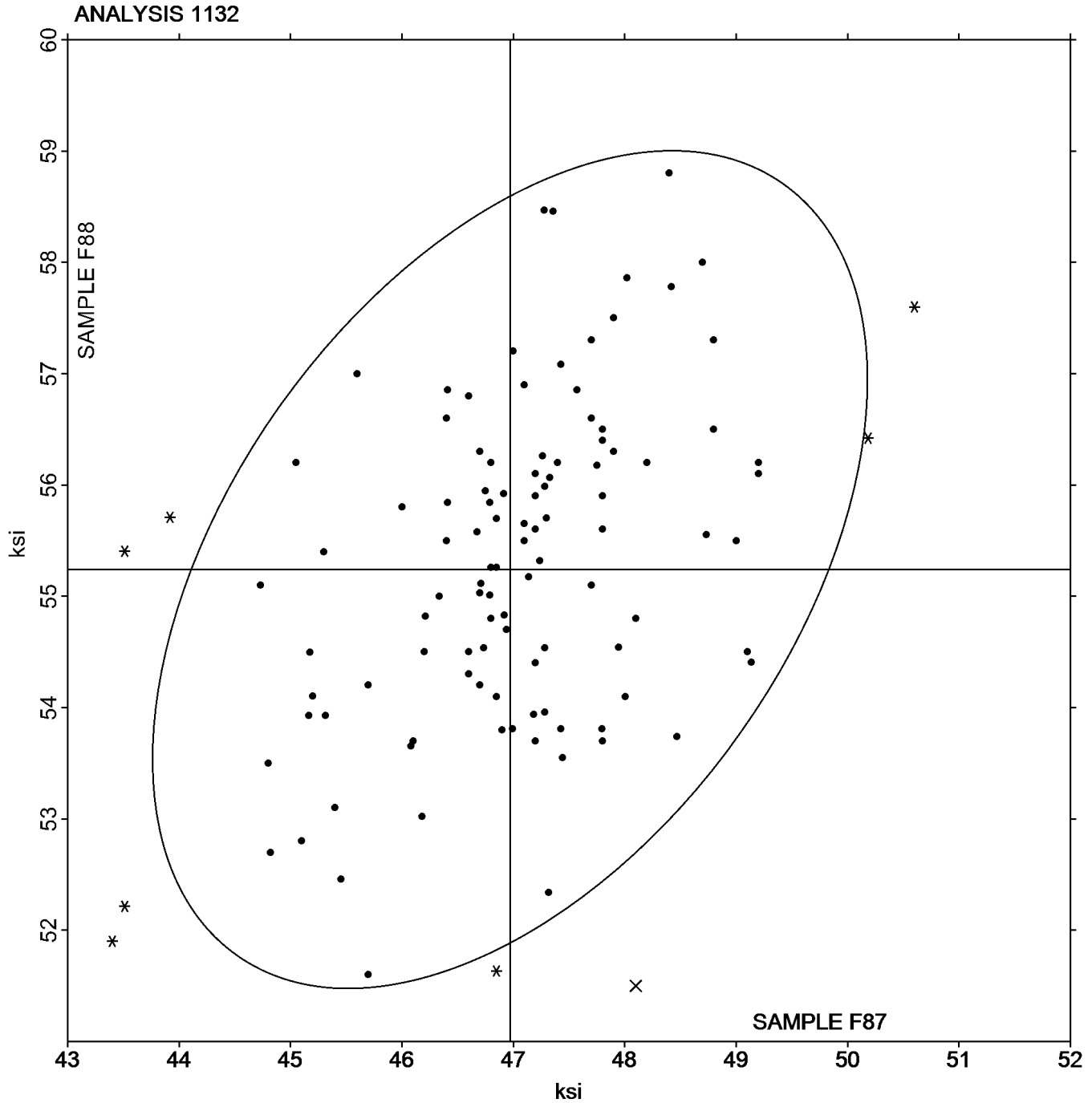
Yield Strength: Lab-Machined Flat Steel
ASTM E8

SAMPLE F87

46.97 ksi

SAMPLE F88

55.24 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
26QTRA		30.90	2.90	1.33	27.90	3.32	1.61
2X8KA6		27.40	-0.60	-0.27	23.10	-1.48	-0.72
37G48W		28.00	0.00	0.00	24.00	-0.58	-0.28
37GAM4	X	28.00	0.00	0.00	21.50	-3.08	-1.49
3M88VQ		28.10	0.10	0.05	23.70	-0.88	-0.43
4CF6V2		26.75	-1.25	-0.57	23.20	-1.38	-0.67
4XJQQT		28.10	0.10	0.05	24.80	0.22	0.11
4ZMKMD		31.00	3.00	1.38	26.00	1.42	0.69
6NCJJ6	X	21.90	-6.10	-2.80	22.50	-2.08	-1.01
6QZVKW		26.10	-1.90	-0.87	22.30	-2.28	-1.11
8BDKN6		30.60	2.60	1.19	28.00	3.42	1.66
8R3HVT		27.10	-0.90	-0.41	22.40	-2.18	-1.06
A7XQNP	X	14.80	-13.20	-6.06	12.47	-12.11	-5.88
APAHKZ		25.20	-2.80	-1.28	22.40	-2.18	-1.06
AWMM86	X	34.88	6.88	3.16	29.35	4.77	2.31
AYCXDQ		27.80	-0.20	-0.09	23.87	-0.71	-0.34
BDUPV6		30.70	2.70	1.24	26.00	1.42	0.69
C2BVWG		22.90	-5.10	-2.34	19.90	-4.68	-2.27
CAL66X		30.82	2.82	1.30	26.72	2.14	1.04
D3ZG2E		28.33	0.33	0.15	25.19	0.61	0.30
D4X2L7		25.50	-2.50	-1.15	22.70	-1.88	-0.91
DBVDX3	X	30.00	2.00	0.92	21.25	-3.33	-1.62
DD4L8M		28.20	0.20	0.09	25.20	0.62	0.30
DTVNCK		28.00	0.00	0.00	24.50	-0.08	-0.04
DVLF2J		29.80	1.80	0.83	26.40	1.82	0.88
DY28RC		30.50	2.50	1.15	27.50	2.92	1.42
EGGY9M		31.20	3.20	1.47	27.80	3.22	1.56
FFKM9D		26.82	-1.18	-0.54	23.01	-1.57	-0.76
FJJ2RW		32.00	4.00	1.84	28.00	3.42	1.66
FJZDCM		27.00	-1.00	-0.46	25.40	0.82	0.40
FNJ33R		26.50	-1.50	-0.69	23.50	-1.08	-0.52
FTBEXN		29.20	1.20	0.55	26.60	2.02	0.98
FUG4U6		28.90	0.90	0.41	26.10	1.52	0.74
G79U9G	X	20.40	-7.60	-3.49	20.00	-4.58	-2.22
GE4ZZX	X	32.50	4.50	2.07	25.00	0.42	0.20
GGC2BW		28.80	0.80	0.37	24.20	-0.38	-0.18
GPJQTN		24.50	-3.50	-1.61	22.00	-2.58	-1.25
GPJRPR	X	29.40	1.40	0.64	28.70	4.12	2.00
GT7EBT		31.70	3.70	1.70	26.30	1.72	0.83
HCPXGH	X	30.50	2.50	1.15	30.20	5.62	2.73
HEYV4K		26.70	-1.30	-0.60	23.45	-1.13	-0.55
HH3N3Q	X	15.77	-12.23	-5.61	13.17	-11.41	-5.54
HL2YXQ		29.50	1.50	0.69	25.30	0.72	0.35
HX932L		26.00	-2.00	-0.92	24.00	-0.58	-0.28
HZHVHT		28.00	0.00	0.00	23.80	-0.78	-0.38
JERAMV	X	32.53	4.53	2.08	25.15	0.57	0.28
JLCAEG		29.30	1.30	0.60	26.40	1.82	0.88



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
JPBPLJ	*	21.90	-6.10	-2.80	18.90	-5.68	-2.76
JTDF6Q		28.40	0.40	0.18	25.15	0.57	0.28
JYMMTA		27.20	-0.80	-0.37	23.40	-1.18	-0.57
KEWZHK		31.00	3.00	1.38	27.00	2.42	1.17
KKF4PM		27.80	-0.20	-0.09	25.00	0.42	0.20
KKW6GH		30.50	2.50	1.15	26.50	1.92	0.93
KKZYWG		31.00	3.00	1.38	26.00	1.42	0.69
KLCGCF		29.00	1.00	0.46	24.00	-0.58	-0.28
KRU7AG		28.71	0.71	0.33	25.49	0.91	0.44
KTRCVH	X	25.20	-2.80	-1.28	19.00	-5.58	-2.71
KX7WYV		30.20	2.20	1.01	26.80	2.22	1.08
L7AGJQ		28.00	0.00	0.00	24.40	-0.18	-0.09
L88RFT		28.50	0.50	0.23	26.00	1.42	0.69
LCVGTB		28.60	0.60	0.28	26.30	1.72	0.83
LZQ2DK		25.00	-3.00	-1.38	22.00	-2.58	-1.25
M4Y2LH		24.70	-3.30	-1.51	22.90	-1.68	-0.82
M789QW	*	29.00	1.00	0.46	28.00	3.42	1.66
MCY9MP		28.90	0.90	0.41	24.40	-0.18	-0.09
MTFMHF		24.10	-3.90	-1.79	21.20	-3.38	-1.64
N2VD77		28.60	0.60	0.28	24.10	-0.48	-0.23
N8ZGL7		27.70	-0.30	-0.14	24.90	0.32	0.16
NCBF4E	*	25.50	-2.50	-1.15	20.40	-4.18	-2.03
NGNF6C		31.80	3.80	1.75	27.70	3.12	1.51
NN6NZ9		27.52	-0.48	-0.22	25.78	1.20	0.58
NQ8PQK		28.67	0.67	0.31	25.34	0.76	0.37
NT33UP		28.80	0.80	0.37	25.90	1.32	0.64
PEDVUG		30.80	2.80	1.29	27.30	2.72	1.32
PLV3PD		28.20	0.20	0.09	24.90	0.32	0.16
PRWKND	X	23.78	-4.22	-1.94	23.68	-0.90	-0.44
QVCKKK	X	0.3580	-27.64	-12.69	0.3870	-24.19	-11.74
QZ9QE2		27.60	-0.40	-0.18	25.00	0.42	0.20
RE93BC		28.52	0.52	0.24	26.05	1.47	0.71
RWCCEJ		29.50	1.50	0.69	26.45	1.87	0.91
T2D9CB	*	21.90	-6.10	-2.80	18.80	-5.78	-2.80
T2FXF9		25.00	-3.00	-1.38	22.10	-2.48	-1.20
TEK9Y2		28.00	0.00	0.00	25.00	0.42	0.20
TJKBBG	*	24.00	-4.00	-1.84	19.50	-5.08	-2.46
TXER4M	X	38.00	10.00	4.59	28.00	3.42	1.66
U4GDFV		27.20	-0.80	-0.37	24.70	0.12	0.06
U9UVXD		26.66	-1.34	-0.61	23.55	-1.03	-0.50
UA6XJC		27.40	-0.60	-0.27	25.10	0.52	0.25
UBYL28		27.00	-1.00	-0.46	23.75	-0.83	-0.40
UJQAGW		29.76	1.76	0.81	27.04	2.46	1.19
VFJBJA		28.40	0.40	0.18	24.20	-0.38	-0.18
VKFUWE		29.30	1.30	0.60	26.30	1.72	0.83
VLV4XR		26.59	-1.41	-0.65	22.90	-1.68	-0.81
VU93LB		26.70	-1.30	-0.60	23.80	-0.78	-0.38



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
VUQAP8	X	28.31	0.31	0.14	32.31	7.73	3.75
W96R29	*	31.90	3.90	1.79	30.00	5.42	2.63
WCL4XP		28.70	0.70	0.32	25.10	0.52	0.25
WDAQ9E		26.00	-2.00	-0.92	23.00	-1.58	-0.77
WJMBJJ		29.80	1.80	0.83	26.40	1.82	0.88
WMZZW2		29.00	1.00	0.46	25.40	0.82	0.40
WNXBR4		26.41	-1.59	-0.73	21.76	-2.82	-1.37
X2H43W		27.60	-0.40	-0.18	22.80	-1.78	-0.86
X4PGM7		26.04	-1.96	-0.90	23.85	-0.73	-0.35
X66M4U	X	29.07	1.07	0.49	28.71	4.13	2.00
X7WYKE		30.20	2.20	1.01	26.50	1.92	0.93
XEMH29		29.10	1.10	0.51	25.50	0.92	0.45
XMZFNH		28.60	0.60	0.28	23.40	-1.18	-0.57
XQ3AQ4		25.30	-2.70	-1.24	22.70	-1.88	-0.91
XQKEXG	X	30.00	2.00	0.92	20.00	-4.58	-2.22
XVPE27	*	22.30	-5.70	-2.62	20.70	-3.88	-1.88
XVQ3K6	X	28.00	0.00	0.00	31.00	6.42	3.12
XWP6N2		29.00	1.00	0.46	26.00	1.42	0.69
Y2YP77		29.00	1.00	0.46	25.00	0.42	0.20
YEJ7U4		31.60	3.60	1.65	26.10	1.52	0.74
YQEFJX		29.80	1.80	0.83	24.60	0.02	0.01
YQVPAE		27.28	-0.72	-0.33	23.51	-1.07	-0.52
YRBQE2		27.70	-0.30	-0.14	24.60	0.02	0.01
YUKRQZ		28.50	0.50	0.23	24.90	0.32	0.16
YY8QR9		28.00	0.00	0.00	25.00	0.42	0.20
ZCN4B9		24.39	-3.61	-1.66	22.81	-1.77	-0.86
ZWJDNW		27.40	-0.60	-0.27	23.50	-1.08	-0.52
ZXVBX8		27.80	-0.20	-0.09	24.40	-0.18	-0.09
ZYPYF3		28.80	0.80	0.37	23.10	-1.48	-0.72

Summary Statistics

	Sample F87		Sample F88	
Grand Means	28.00	Percent	24.58	Percent
Std Dev Btwn Labs	2.18	Percent	2.06	Percent

Samples F87, F88 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 104 of 123 reporting participants



Analysis 1133

Elongation: Lab-Machined Flat Steel
ASTM E8

Comments on Assigned Data Flags for Test #1133

- 37GAM4 (X) - Inconsistent in testing between samples.
- 6NCJJ6 (X) - Data for sample F87 are low.
- A7XQNP (X) - Data for both samples are low. Possible Systematic Error.
- AWMM86 (X) - Data for sample F87 are high.
- DBVDX3 (X) - Inconsistent in testing between samples.
- G79U9G (X) - Data for sample F87 are low.
- GE4ZZX (X) - Inconsistent in testing between samples.
- GPJRPR (X) - Inconsistent in testing between samples.
- HCPXGH (X) - Inconsistent in testing between samples.
- HH3N3Q (X) - Data for both samples are low. Possible Systematic Error.
- JERAMV (X) - Inconsistent in testing between samples.
- KTRCVH (X) - Inconsistent in testing between samples.
- PRWKND (X) - Inconsistent in testing between samples.
- QVCCCK (X) - Extreme data.
- TXER4M (X) - Data for sample F87 are high.
- VUQAP8 (X) - Data for sample F88 are high.
- X66M4U (X) - Inconsistent in testing between samples.
- XQKEXG (X) - Inconsistent in testing between samples.
- XVQ3K6 (X) - Data for sample F88 are high.



Analysis 1133

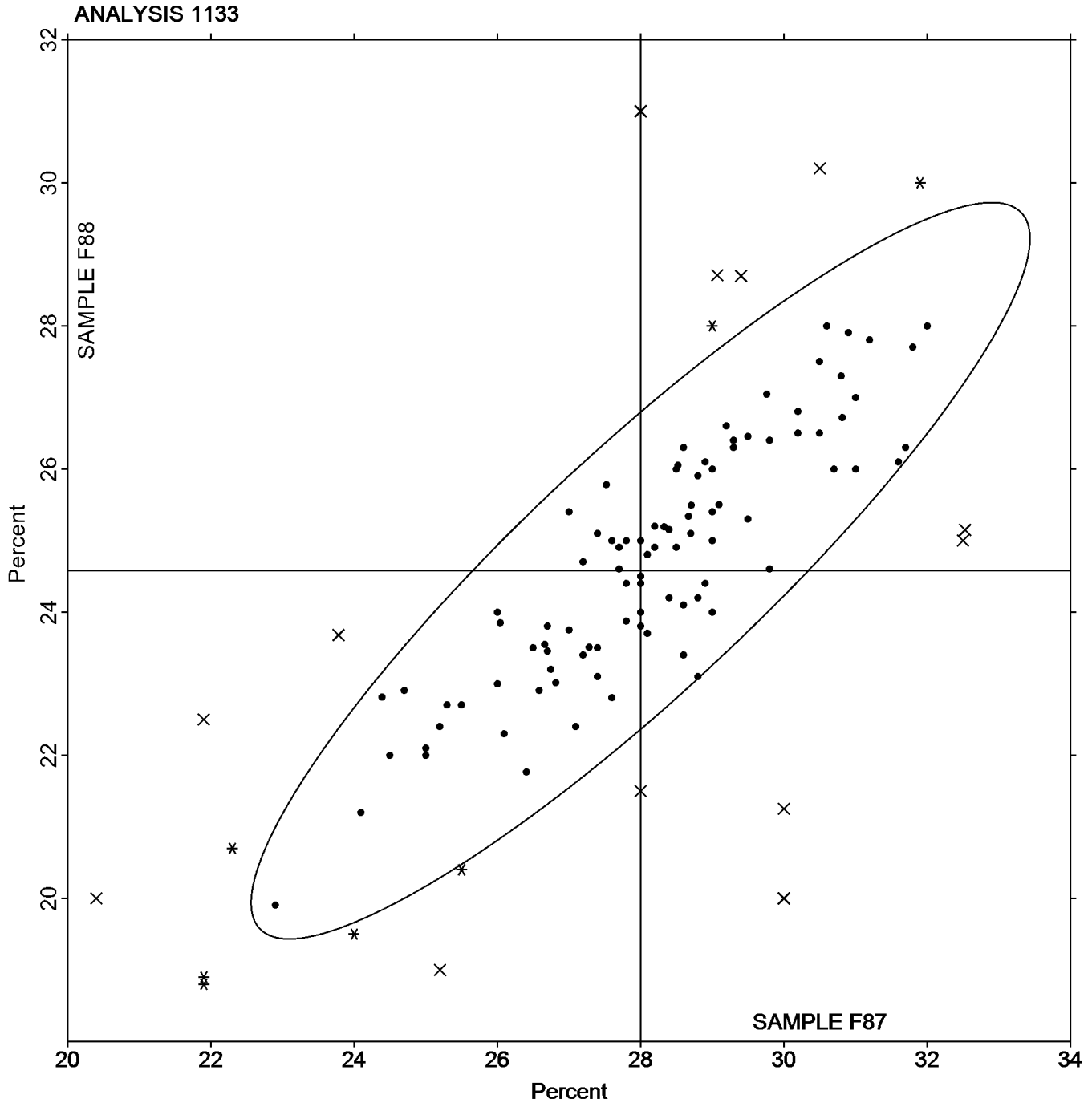
Elongation: Lab-Machined Flat Steel
ASTM E8

SAMPLE F87

28.00 Percent

SAMPLE F88

24.58 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1134

r-Value: Lab-Machined Flat Steel
ASTM E517

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2X8KA6		0.6810	0.0067	0.13	0.7000	0.0531	0.97
8BDKN6		0.7000	0.0257	0.51	0.6000	-0.0469	-0.86
8R3HVT	*	0.5630	-0.1113	-2.20	0.6860	0.0391	0.71
A7XQNP		0.6210	-0.0533	-1.05	0.6220	-0.0249	-0.46
BDUPV6		0.7030	0.0287	0.57	0.5750	-0.0719	-1.32
D3ZG2E		0.6900	0.0157	0.31	0.6300	-0.0169	-0.31
EGGY9M		0.7300	0.0557	1.10	0.6300	-0.0169	-0.31
FFKM9D		0.6300	-0.0443	-0.88	0.6100	-0.0369	-0.68
FJJ2RW		0.6700	-0.0043	-0.08	0.6600	0.0131	0.24
FNJ33R		0.6590	-0.0153	-0.30	0.6350	-0.0119	-0.22
FTBEXN		0.6200	-0.0543	-1.07	0.5620	-0.0849	-1.55
GGC2BW		0.7100	0.0357	0.71	0.7600	0.1131	2.07
HEYV4K	X	-0.002000	-0.6763	-13.37	-0.002000	-0.6489	-11.87
HH3N3Q		0.6520	-0.0223	-0.44	0.6100	-0.0369	-0.68
HX932L	X	0.9700	0.2957	5.85	1.170	0.5231	9.57
JLCAEG		0.6980	0.0237	0.47	0.6280	-0.0189	-0.35
KKZYWG		0.6600	-0.0143	-0.28	0.5200	-0.1269	-2.32
L7AGJQ		0.7400	0.0657	1.30	0.6700	0.0231	0.42
LCVGTB		0.6400	-0.0343	-0.68	0.6300	-0.0169	-0.31
MCY9MP		0.7500	0.0757	1.50	0.7600	0.1131	2.07
NT33UP		0.6500	-0.0243	-0.48	0.6200	-0.0269	-0.49
PEDVUG		0.6110	-0.0633	-1.25	0.6350	-0.0119	-0.22
QVCKCK	X	0.3680	-0.3063	-6.05	0.3660	-0.2809	-5.14
QZ9QE2		0.7210	0.0467	0.92	0.7010	0.0541	0.99
T2FXF9	M	0.5000	-0.1743	-3.45	No Data Reported		
U9UVXD		0.6700	-0.0043	-0.08	0.6300	-0.0169	-0.31
VUQAP8		0.6940	0.0197	0.39	0.6760	0.0291	0.53
W96R29		0.6650	-0.0093	-0.18	0.6140	-0.0329	-0.60
WJMBJJ		0.7110	0.0367	0.73	0.6920	0.0451	0.82
X4PGM7		0.8000	0.1257	2.49	0.7300	0.0831	1.52
X7WYKE		0.6000	-0.0743	-1.47	0.6200	-0.0269	-0.49
XEMH29		0.6250	-0.0493	-0.97	0.6850	0.0381	0.70
XVQ3K6	X	0.8300	0.1557	3.08	0.4800	-0.1669	-3.05
YRBQE2		0.6900	0.0157	0.31	0.6700	0.0231	0.42

Summary Statistics

	Sample F87	Sample F88
Grand Means	0.6743	0.6469
Std Dev Btwn Labs	0.0506	0.0547

Samples F87, F88 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 29 of 34 reporting participants



Comments on Assigned Data Flags for Test #1134

HEYV4K (X) - Data for both samples are low.

HX932L (X) - Data for both samples are high.

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

T2FXF9 (M) - Participant did not submit data for sample F88.

XVQ3K6 (X) - Data for sample F87 are high and data for sample F88 are low.



Analysis 1134

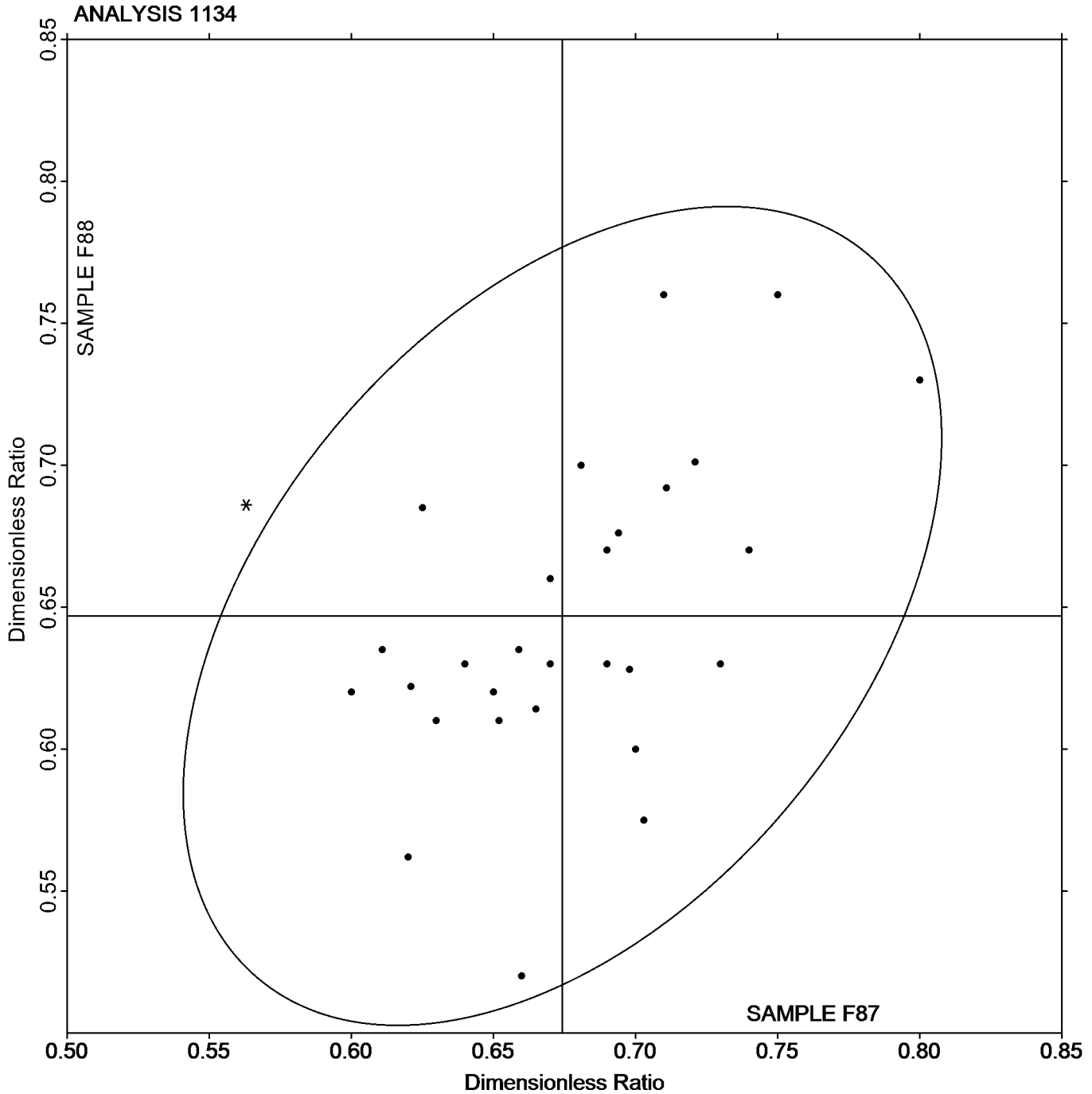
r-Value: Lab-Machined Flat Steel
ASTM E517

SAMPLE F87

SAMPLE F88

0.6743

0.6469





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1135

n-Value: Lab-Machined Flat Steel
ASTM E646

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2X8KA6		0.1440	-0.0012	-0.15	0.1200	-0.0012	-0.13
3M88VQ		0.1460	0.0008	0.09	0.1200	-0.0012	-0.13
6QZVKW		0.1450	-0.0002	-0.03	0.1200	-0.0012	-0.13
8BDKN6		0.1540	0.0088	1.05	0.1390	0.0178	2.05
8R3HVT		0.1610	0.0158	1.89	0.1300	0.0088	1.01
A7XQNP		0.1400	-0.0052	-0.63	0.1190	-0.0022	-0.25
APAHKZ		0.1350	-0.0102	-1.23	0.1040	-0.0172	-1.97
AYCXDQ		0.1519	0.0067	0.80	0.1241	0.0029	0.34
BDUPV6		0.1440	-0.0012	-0.15	0.1250	0.0038	0.44
C2BVWG	X	0.0900	-0.0552	-6.63	0.0440	-0.0772	-8.86
D3ZG2E		0.1500	0.0048	0.57	0.1200	-0.0012	-0.13
D4X2L7		0.1300	-0.0152	-1.83	0.1100	-0.0112	-1.28
EGGY9M	*	0.1660	0.0208	2.49	0.1350	0.0138	1.59
FFKM9D		0.1420	-0.0032	-0.39	0.1110	-0.0102	-1.17
FJJ2RW		0.1600	0.0148	1.77	0.1400	0.0188	2.16
FNJ33R		0.1450	-0.0002	-0.03	0.1230	0.0018	0.21
FTBEXN		0.1475	0.0023	0.27	0.1234	0.0022	0.26
GGC2BW		0.1440	-0.0012	-0.15	0.1240	0.0028	0.32
HEYV4K		0.1395	-0.0057	-0.69	0.1175	-0.0037	-0.42
HH3N3Q		0.1430	-0.0022	-0.27	0.1210	-0.0002	-0.02
HX932L	*	0.1700	0.0248	2.97	0.1400	0.0188	2.16
JLCAEG		0.1580	0.0128	1.53	0.1280	0.0068	0.78
KKZYWG		0.1460	0.0008	0.09	0.1260	0.0048	0.55
KLCGCF	X	0.1498	0.0046	0.55	0.1012	-0.0200	-2.29
L7AGJQ		0.1400	-0.0052	-0.63	0.1100	-0.0112	-1.28
LCVGTB		0.1440	-0.0012	-0.15	0.1240	0.0028	0.32
MCY9MP		0.1460	0.0008	0.09	0.1220	0.0008	0.10
NGNF6C	X	0.2900	0.1448	17.38	0.2200	0.0988	11.34
NT33UP		0.1450	-0.0002	-0.03	0.1240	0.0028	0.32
PEDVUG		0.1400	-0.0052	-0.63	0.1200	-0.0012	-0.13
PLV3PD		0.1491	0.0039	0.47	0.1230	0.0018	0.21
QVCCKK		0.1520	0.0068	0.81	0.1310	0.0098	1.13
QZ9QE2		0.1400	-0.0052	-0.63	0.1230	0.0018	0.21
T2FXF9	M	0.5000	0.3548	42.58	No Data Reported		
U9UVXD		0.1420	-0.0032	-0.39	0.1250	0.0038	0.44
UA6XJC		0.1330	-0.0122	-1.47	0.1050	-0.0162	-1.86
VFJBJA		0.1460	0.0008	0.09	0.1230	0.0018	0.21
VKFUWE		0.1420	-0.0032	-0.39	0.1200	-0.0012	-0.13
VLV4XR		0.1479	0.0027	0.32	0.1256	0.0044	0.51
VUQAP8		0.1390	-0.0062	-0.75	0.1060	-0.0152	-1.74
W96R29		0.1470	0.0018	0.21	0.1240	0.0028	0.32
WJMJJ		0.1370	-0.0082	-0.99	0.1220	0.0008	0.10
X4PGM7		0.1450	-0.0002	-0.03	0.1110	-0.0102	-1.17
X66M4U	X	0.1381	-0.0071	-0.85	0.1373	0.0161	1.85
X7WYKE		0.1490	0.0038	0.45	0.1210	-0.0002	-0.02
XEMH29		0.1400	-0.0052	-0.63	0.1220	0.0008	0.10
XQ3AQ4		0.1420	-0.0032	-0.39	0.1190	-0.0022	-0.25



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1135

n-Value: Lab-Machined Flat Steel
ASTM E646

WebCode	Data Flag	Sample F87			Sample F88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
XVQ3K6	X	0.1070	-0.0382	-4.59	0.2400	0.1188	13.64
Y2YP77	*	0.1370	-0.0082	-0.99	0.1020	-0.0192	-2.20
YRBQE2		0.1400	-0.0052	-0.63	0.1200	-0.0012	-0.13
ZYPYF3		0.1300	-0.0152	-1.83	0.1100	-0.0112	-1.28

Summary Statistics

	Sample F87	Sample F88
Grand Means	0.1452	0.1212
Stnd Dev Btwn Labs	0.0083	0.0087

Samples F87, F88 : AISI 4130 - 12G, AISI 4130 - 14G

Statistics based on 45 of 51 reporting participants

Comments on Assigned Data Flags for Test #1135

- C2BVWG (X) - Data for both samples are low. Possible Systematic Error.
- KLCGCF (X) - Inconsistent in testing between samples.
- NGNF6C (X) - Data for both samples are high. Possible Systematic Error.
- T2FXF9 (M) - Participant did not submit data for sample F88.
- X66M4U (X) - Inconsistent in testing between samples.
- XVQ3K6 (X) - Data for sample F87 are low and data for sample F88 are high. Inconsistent in testing between samples.



Analysis 1135

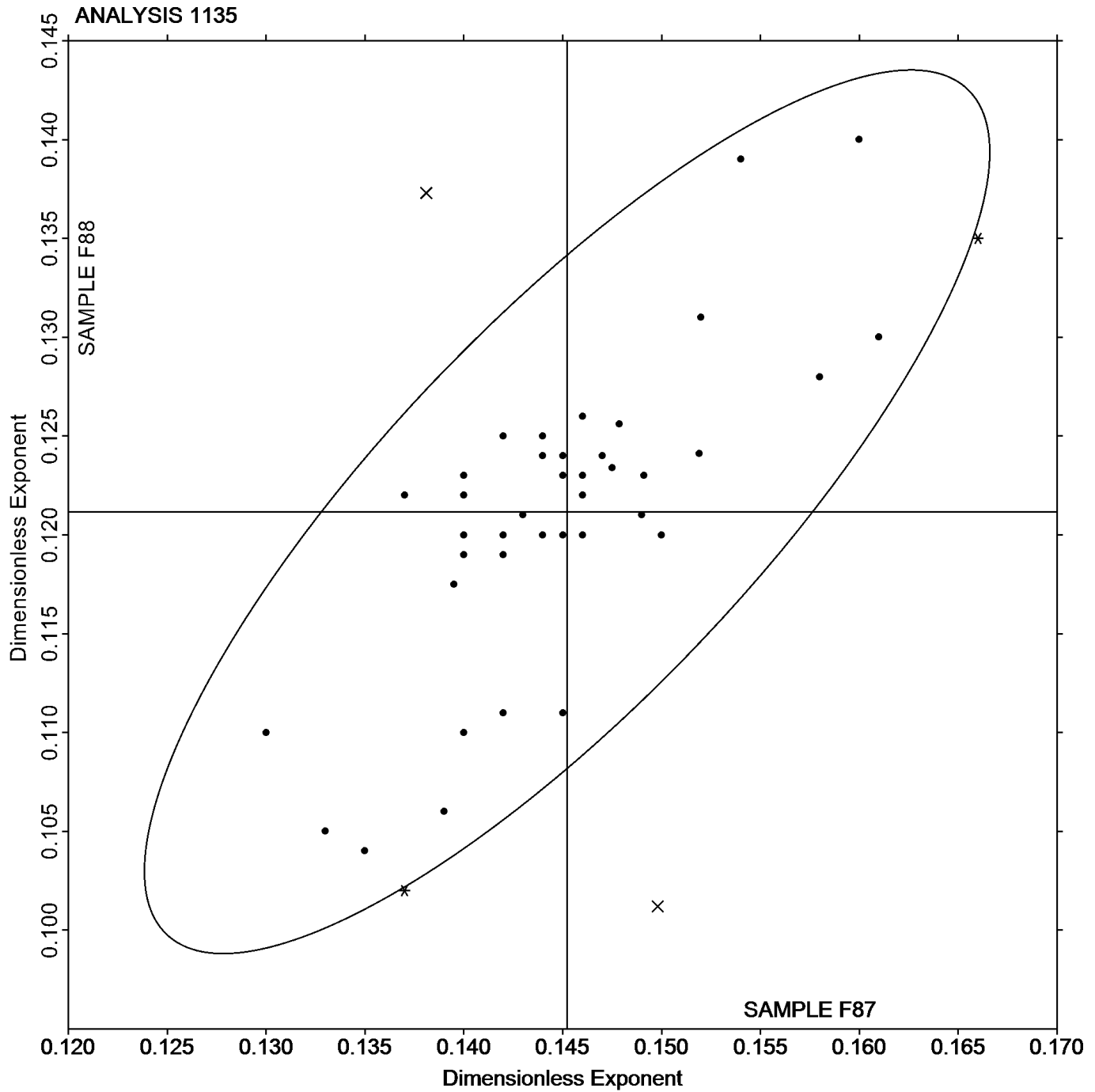
n-Value: Lab-Machined Flat Steel
ASTM E646

SAMPLE F87

SAMPLE F88

0.1452

0.1212





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1201

Fastener Wedge Tensile (10 degree)
ASTM F606

WebCode	Data Flag	Sample X87			Sample X88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2V6J8M		140.00	0.93	0.63	137.67	2.53	1.26
3CQA3F	X	147.87	8.79	6.00	138.97	3.83	1.91
3JAQGB		137.86	-1.21	-0.83	135.56	0.42	0.21
3YGR9R		139.57	0.49	0.34	135.60	0.46	0.23
6KRHDX		137.64	-1.43	-0.98	132.45	-2.69	-1.34
6KUJ4P		139.67	0.59	0.40	134.67	-0.47	-0.24
6QTUUAU		137.74	-1.34	-0.91	134.77	-0.37	-0.19
6QVKER		139.40	0.33	0.22	135.40	0.26	0.13
73PDAL	X	186.33	47.26	32.25	180.63	45.49	22.66
8GJ6KN	*	143.00	3.93	2.68	140.67	5.53	2.75
8R7CCQ		140.34	1.27	0.87	137.51	2.37	1.18
93GVKL		139.00	-0.07	-0.05	134.67	-0.47	-0.24
9RFNKF		137.93	-1.14	-0.78	133.53	-1.61	-0.80
ACLHRC	X	118.93	-20.14	-13.74	114.70	-20.44	-10.18
AT3NXG		142.58	3.51	2.39	139.74	4.60	2.29
B2ZRPK		138.65	-0.42	-0.29	133.76	-1.38	-0.68
BRMP7R	X	149.99	10.92	7.45	135.96	0.82	0.41
CDT9EL		137.14	-1.93	-1.32	133.32	-1.82	-0.91
CPYNXW		142.49	3.42	2.33	138.27	3.13	1.56
CXWZEY	X	133.48	-5.59	-3.81	133.19	-1.94	-0.97
D9CADC		139.60	0.53	0.36	133.77	-1.37	-0.68
EPDQKM		139.48	0.41	0.28	135.47	0.33	0.16
F6MYV		137.79	-1.29	-0.88	134.45	-0.69	-0.34
F867EH		138.67	-0.41	-0.28	136.03	0.89	0.45
F9JLRJ		139.37	0.29	0.20	136.17	1.03	0.51
FGGZV7		138.25	-0.82	-0.56	134.23	-0.91	-0.45
GG9P4R		140.03	0.96	0.65	135.44	0.30	0.15
HGP64E		138.40	-0.67	-0.46	135.40	0.26	0.13
HJCTHZ		139.97	0.89	0.61	135.50	0.36	0.18
HN4ZZ9		137.30	-1.77	-1.21	133.30	-1.84	-0.92
JBGX6N		139.07	-0.01	0.00	133.30	-1.84	-0.92
JEFKTJ		138.20	-0.87	-0.60	133.37	-1.77	-0.88
JYKXPC		137.09	-1.98	-1.35	131.86	-3.28	-1.63
KPVFL4		137.43	-1.64	-1.12	133.27	-1.87	-0.93
LQMWEC		142.50	3.43	2.34	139.67	4.53	2.25
LZQ2DK		141.04	1.97	1.34	138.60	3.46	1.72
N2VD77		137.97	-1.11	-0.76	134.43	-0.71	-0.35
N3LRAA		139.89	0.81	0.55	135.77	0.63	0.31
N42W7M		138.67	-0.41	-0.28	134.33	-0.81	-0.40
NZZZCL		140.66	1.59	1.09	137.21	2.07	1.03
QEWNNC		138.73	-0.34	-0.23	136.53	1.39	0.69
QPUYN8		139.37	0.30	0.20	135.27	0.13	0.06
QW9NEE		138.87	-0.21	-0.14	133.27	-1.87	-0.93
R3DXX7		139.77	0.69	0.47	135.77	0.63	0.31
RKB2NA	X	144.70	5.62	3.84	146.75	11.61	5.78
T2XWQX		137.30	-1.77	-1.21	132.73	-2.41	-1.20
TJKBBG		140.10	1.03	0.70	134.10	-1.04	-0.52



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1201

Fastener Wedge Tensile (10 degree)
ASTM F606

WebCode	Data Flag	Sample X87			Sample X88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
UAA9PG		138.00	-1.07	-0.73	132.67	-2.47	-1.23
UCFVYE		139.33	0.26	0.18	134.23	-0.91	-0.45
UJCLLB	X	141.00	1.93	1.31	133.67	-1.47	-0.73
VGZGZX		137.88	-1.19	-0.81	134.79	-0.35	-0.17
VX996N	X	147.62	8.55	5.83	142.15	7.01	3.49
W9P7XX		139.40	0.32	0.22	134.28	-0.86	-0.43
WM4MA9		140.14	1.07	0.73	137.72	2.58	1.29
WVHMRQ		137.96	-1.11	-0.76	132.20	-2.94	-1.46
WVZFQF		138.93	-0.14	-0.10	135.67	0.53	0.26
WX9LCG		138.93	-0.14	-0.10	136.80	1.66	0.83
WYUGL3		137.68	-1.39	-0.95	134.78	-0.36	-0.18
XYT3L3		138.71	-0.37	-0.25	134.60	-0.54	-0.27
XZNFJ2		141.40	2.33	1.59	138.70	3.56	1.77
YEJ7U4		138.14	-0.94	-0.64	133.60	-1.54	-0.77
YKWXAW		137.37	-1.71	-1.16	132.27	-2.87	-1.43
YMCHYK		140.07	0.99	0.68	136.80	1.66	0.83
YVDM6V	X	141.10	2.02	1.38	141.78	6.64	3.31
ZDN8VW		139.40	0.33	0.22	135.53	0.39	0.20
ZEJJ2W	*	135.80	-3.27	-2.23	133.47	-1.67	-0.83
ZLJ2C3		138.59	-0.48	-0.33	133.14	-2.00	-1.00

Summary Statistics

	Sample X87		Sample X88	
Grand Means	139.07	ksi	135.14	ksi
Std Dev Btwn Labs	1.47	ksi	2.01	ksi

Samples X87, X88 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 58 of 67 reporting participants

Comments on Assigned Data Flags for Test #1201

- 3CQA3F (X) - Data for sample X87 are high.
- 73PDAL (X) - Data for both samples are high.
- ACLHRC (X) - Data for both samples are low.
- BRMP7R (X) - Data for sample X87 are high.
- CXWZEY (X) - Data for sample X87 are low. Inconsistent within the determinations of sample X87.
- RKB2NA (X) - Data for both samples are high.
- UJCLLB (X) - Inconsistent in testing between samples. Inconsistent within the determinations of both samples.
- VX996N (X) - Data for both samples are high.
- YVDM6V (X) - Data for sample X88 are high.



Analysis 1201

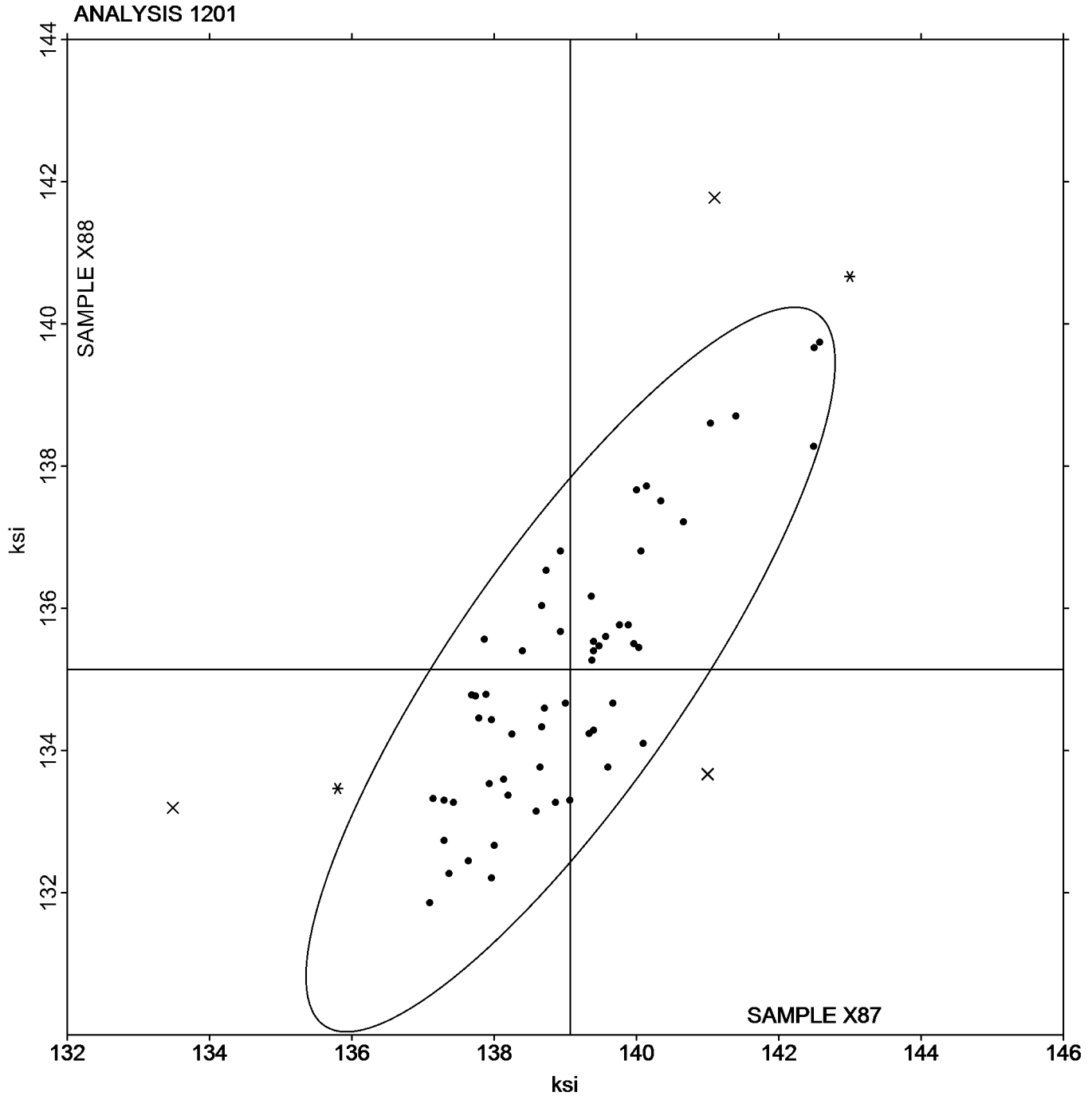
Fastener Wedge Tensile (10 degree)
ASTM F606

SAMPLE X87

SAMPLE X88

139.07 ksi

135.14 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1202

Fastener Axial Tensile
ASTM F606

WebCode	Data Flag	Sample Q87			Sample Q88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
29QY7F		142.00	2.22	1.62	137.33	1.25	0.74
2V6J8M		140.33	0.55	0.40	137.33	1.25	0.74
34BWN4	X	148.30	8.52	6.22	148.86	12.77	7.55
3LW69R		139.00	-0.78	-0.57	134.23	-1.85	-1.10
3YGR9R		140.10	0.32	0.23	136.53	0.45	0.26
4QKDJC		141.39	1.61	1.17	139.32	3.24	1.91
6KRHDX		137.87	-1.91	-1.39	134.23	-1.85	-1.10
6KUJ4P		140.00	0.22	0.16	135.33	-0.75	-0.45
6QVKER		140.13	0.35	0.26	136.47	0.38	0.22
6T28RW	*	142.14	2.36	1.72	135.85	-0.23	-0.14
73PDAL	X	186.53	46.75	34.11	182.67	46.58	27.53
8GJ6KN		140.33	0.55	0.40	139.33	3.25	1.92
8R7CCQ		140.34	0.56	0.41	137.63	1.55	0.91
ADTVA2		137.50	-2.28	-1.67	134.78	-1.30	-0.77
AG9E9M		139.29	-0.50	-0.36	136.51	0.42	0.25
AXMENL		138.46	-1.32	-0.96	135.85	-0.23	-0.14
B2ZRPK	X	134.38	-5.40	-3.94	132.60	-3.49	-2.06
BRMP7R		141.10	1.31	0.96	139.53	3.44	2.03
C34TZH		140.63	0.85	0.62	135.67	-0.42	-0.25
CL2W4D		139.92	0.14	0.10	136.09	0.01	0.00
CPYNXW		142.95	3.17	2.31	139.88	3.79	2.24
DDJ37M		139.96	0.17	0.13	135.27	-0.82	-0.48
DQRL2W		138.40	-1.38	-1.01	133.63	-2.45	-1.45
EPDQKM		140.06	0.28	0.20	135.27	-0.81	-0.48
F6MYV		138.51	-1.27	-0.93	134.74	-1.35	-0.80
F867EH		139.30	-0.48	-0.35	136.93	0.85	0.50
FGGZV7		138.31	-1.48	-1.08	135.98	-0.11	-0.06
G8PXAN		139.13	-0.65	-0.47	136.03	-0.05	-0.03
GG9P4R		139.88	0.10	0.07	136.34	0.25	0.15
HCBC8U		138.92	-0.87	-0.63	135.41	-0.68	-0.40
HGP64E		139.13	-0.65	-0.47	135.23	-0.85	-0.50
HJCTHZ		140.57	0.78	0.57	136.17	0.08	0.05
JEFKTJ		137.77	-2.02	-1.47	134.30	-1.79	-1.06
JLXWNC		140.80	1.01	0.74	137.36	1.28	0.75
JY6L6L		141.42	1.64	1.20	137.79	1.70	1.01
KPVFL4		138.47	-1.32	-0.96	134.93	-1.15	-0.68
LZQ2DK		142.35	2.57	1.88	138.73	2.65	1.56
ME28VX		139.23	-0.56	-0.41	134.88	-1.21	-0.71
N2VD77		137.40	-2.38	-1.74	133.33	-2.75	-1.63
N3LRAA		139.63	-0.15	-0.11	135.13	-0.95	-0.56
NNPF27		140.63	0.85	0.62	135.20	-0.89	-0.52
NTE7WF	*	139.05	-0.73	-0.53	132.50	-3.58	-2.12
PZETDA	X	11.31	-128.48	-93.73	10.86	-125.23	-74.01
QKX8JF		140.00	0.22	0.16	137.67	1.58	0.93
QPUYN8		139.38	-0.40	-0.30	135.76	-0.33	-0.19
QWRN8W		140.35	0.56	0.41	136.75	0.66	0.39
R3DXX7		138.93	-0.85	-0.62	135.20	-0.89	-0.52



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

Cycle 140
4th Qtr 2022

WebCode	Data Flag	Sample Q87			Sample Q88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
RKB2NA	X	145.41	5.63	4.11	140.87	4.79	2.83
RMJBPT		138.04	-1.74	-1.27	136.15	0.06	0.04
T2XWQX		138.57	-1.22	-0.89	134.83	-1.25	-0.74
UAA9PG		138.67	-1.12	-0.81	133.33	-2.75	-1.63
UHW4E		140.96	1.18	0.86	137.05	0.96	0.57
V7JHNA	M	139.60	-0.18	-0.13	No Data Reported		
VGZGZX		139.43	-0.35	-0.26	135.18	-0.91	-0.54
VKYTZ4	*	140.97	1.19	0.87	140.30	4.21	2.49
VX996N	X	147.05	7.26	5.30	144.57	8.49	5.02
W9P7XX		140.95	1.16	0.85	136.34	0.26	0.15
WM4MA9		140.60	0.81	0.59	135.67	-0.42	-0.25
WVZFQF		139.80	0.02	0.02	136.37	0.28	0.17
WX9LCG		140.23	0.45	0.33	135.33	-0.75	-0.45
XYT3L3		139.24	-0.54	-0.40	135.76	-0.33	-0.20
YEJ7U4		138.62	-1.16	-0.85	136.02	-0.07	-0.04
YKWXAW		138.03	-1.75	-1.28	134.13	-1.95	-1.15
YVDM6V	*	143.26	3.48	2.54	138.53	2.44	1.44
ZDN8VW		139.93	0.15	0.11	136.30	0.21	0.13
ZEJJ2W		137.30	-2.48	-1.81	134.30	-1.79	-1.06
ZLJ2C3		138.70	-1.08	-0.79	134.26	-1.83	-1.08
ZVQP62		142.33	2.55	1.86	139.00	2.91	1.72

Summary Statistics

	Sample Q87		Sample Q88	
Grand Means	139.78	ksi	136.09	ksi
Std Dev Btwn Labs	1.37	ksi	1.69	ksi

Samples Q87, Q88 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 61 of 68 reporting participants

Comments on Assigned Data Flags for Test #1202

- 34BWN4 (X) - Data for both samples are high. Inconsistent within the determinations of sample Q87.
- 73PDAL (X) - Data for both samples are high.
- B2ZRPK (X) - Data for sample Q87 are low. Inconsistent within the determinations of sample Q88.
- PZETDA (X) - Extreme data.
- RKB2NA (X) - Data for both samples are high.
- V7JHNA (M) - Participant did not submit data for sample Q88.
- VX996N (X) - Data for both samples are high.



Analysis 1202

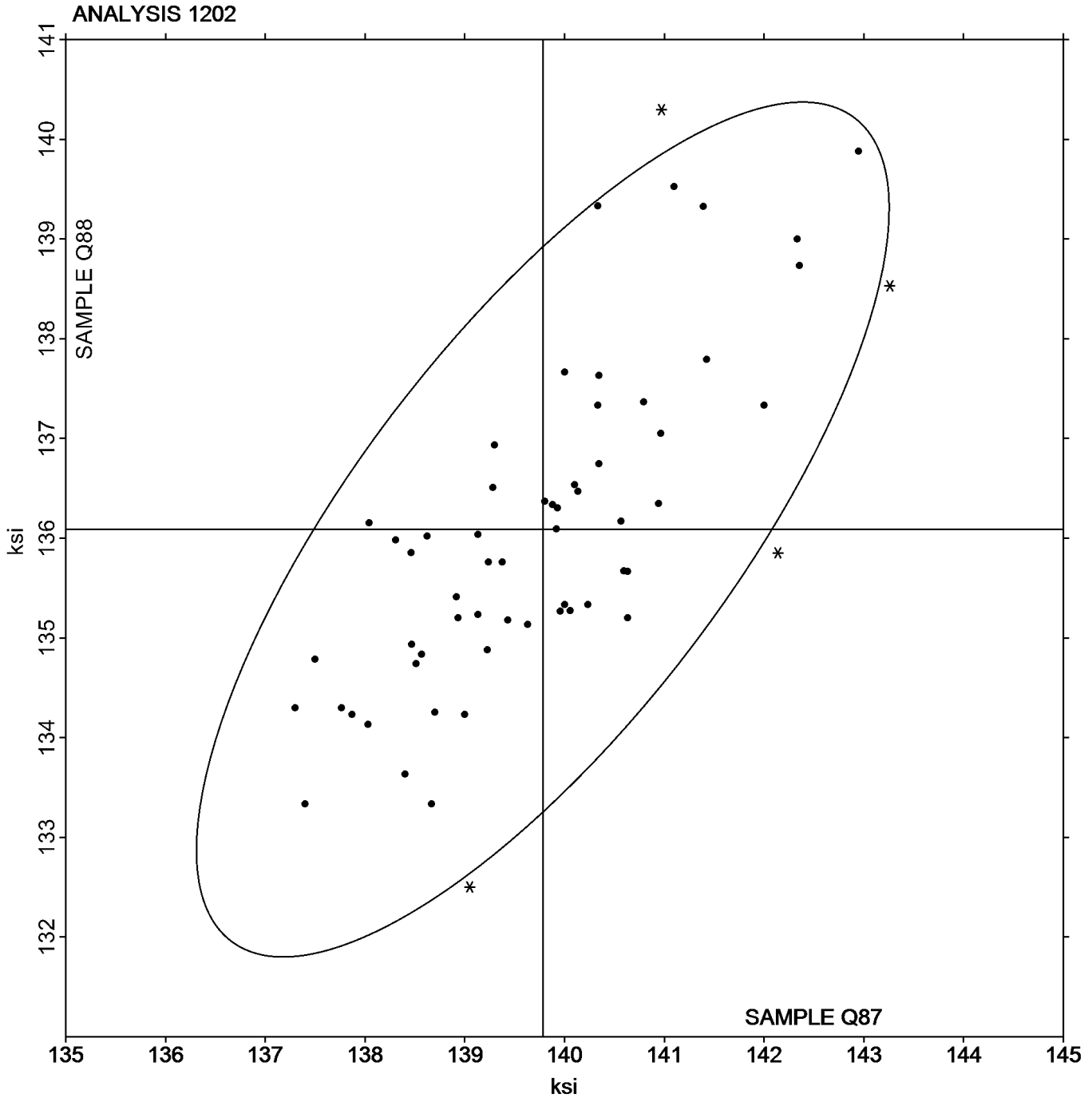
Fastener Axial Tensile
ASTM F606

SAMPLE Q87

139.78 ksi

SAMPLE Q88

136.09 ksi





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1203

Fastener Wedge Tensile (10 degree) - Metric
ASTM F606M

WebCode	Data Flag	Sample B87			Sample B88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
43B9XQ		1,083	-15	-1.02	1,131	-12	-0.93
6E7GGT		1,092	-6	-0.40	1,134	-9	-0.70
73PDAL	X	1,365	266	17.79	1,409	267	20.45
7THEWD		1,083	-15	-1.00	1,144	1	0.05
82PHH3		1,084	-14	-0.97	1,156	13	0.98
BGPLD6		1,095	-3	-0.18	1,127	-16	-1.21
BUH7WG		1,109	11	0.74	1,137	-5	-0.42
CPYNXW		1,090	-8	-0.53	1,156	14	1.04
CRA83Y		1,106	7	0.50	1,147	4	0.30
CWHQ6Y		1,095	-3	-0.21	1,131	-11	-0.88
FNV2TG		1,090	-8	-0.53	1,150	7	0.55
FTBGK8		1,097	-2	-0.10	1,140	-3	-0.22
GKD3GK		1,109	10	0.70	1,152	9	0.67
HY3QKG		1,109	11	0.72	1,145	2	0.14
KA2983		1,076	-23	-1.50	1,139	-4	-0.32
KPVFL4		1,083	-15	-0.99	1,131	-12	-0.93
L96XAE		1,096	-2	-0.12	1,140	-3	-0.22
N3LRAA		1,102	4	0.26	1,158	15	1.15
NPMQX9		1,085	-13	-0.88	1,117	-25	-1.95
R7VXDL		1,129	31	2.06	1,166	23	1.78
R8RBZE		1,118	20	1.32	1,137	-6	-0.45
RJ4YTC		1,090	-8	-0.53	1,144	1	0.08
RMGLLV		1,076	-22	-1.48	1,124	-19	-1.44
U7A7FL		1,118	20	1.32	1,173	31	2.34
UEJL8E		1,123	25	1.66	1,145	3	0.19
XZNFJ2		1,116	17	1.17	1,148	5	0.40

Summary Statistics

	Sample B87		Sample B88	
Grand Means	1,098	MPa	1,143	MPa
Std Dev Btw Labs	15	MPa	13	MPa

Samples B87, B88 : M-10x1.5x70, M-10x1.5x75

Statistics based on 25 of 26 reporting participants

Comments on Assigned Data Flags for Test #1203

73PDAL (X) - Data for both samples are high.



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1204

Fastener Axial Tensile - Metric
ASTM F606M

WebCode	Data Flag	Sample T87			Sample T88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2XVJRC		1,087	-9	-0.97	1,116	-21	-1.39
43B9XQ		1,088	-8	-0.86	1,123	-14	-0.91
7THEWD		1,096	0	-0.04	1,143	6	0.40
9ZP8KR		1,114	18	1.91	1,169	32	2.04
BGPLD6		1,084	-12	-1.34	1,127	-10	-0.66
CL2W4D		1,097	0	0.05	1,140	2	0.15
CPYNXW		1,109	12	1.33	1,129	-8	-0.53
DD2W3Q		1,103	7	0.72	1,149	12	0.74
F7YETW		1,092	-5	-0.50	1,137	0	-0.03
FNV2TG		1,109	12	1.33	1,142	5	0.31
FTBGK8		1,097	0	0.04	1,130	-7	-0.46
HXBF6V		1,101	4	0.47	1,137	0	-0.03
JZVUWP	X	1,153	57	6.13	1,170	33	2.12
KA2983		1,091	-5	-0.54	1,146	9	0.56
KPVFL4		1,101	5	0.51	1,133	-4	-0.27
LFZ2WN	*	1,103	7	0.76	1,178	41	2.64
ME6T96		1,100	4	0.40	1,150	13	0.83
MUWQCK		1,090	-6	-0.65	1,132	-5	-0.32
Q3G4ZA		1,101	4	0.47	1,157	20	1.30
QK2UWN		1,076	-20	-2.17	1,116	-22	-1.39
RHNPMJ		1,092	-4	-0.45	1,121	-16	-1.02
RJ4YTC		1,102	6	0.64	1,136	-1	-0.07
UEJL8E		1,095	-1	-0.14	1,131	-6	-0.38
VX996N	X	1,160	64	6.91	1,222	85	5.48
W3GX8J		1,077	-19	-2.09	1,115	-22	-1.43
YDACX4		1,100	3	0.36	1,142	5	0.34
ZBZE8V		1,103	7	0.76	1,130	-7	-0.44

Summary Statistics

	Sample T87		Sample T88	
Grand Means	1,096	MPa	1,137	MPa
Std Dev Btwn Labs	9	MPa	15	MPa

Samples T87, T88 : M-10x1.5x70, M-10x1.5x75

Statistics based on 25 of 27 reporting participants

Comments on Assigned Data Flags for Test #1204

JZVUWP (X) - Data for sample T87 are high.

VX996N (X) - Data for both samples are high.



Analysis 1204

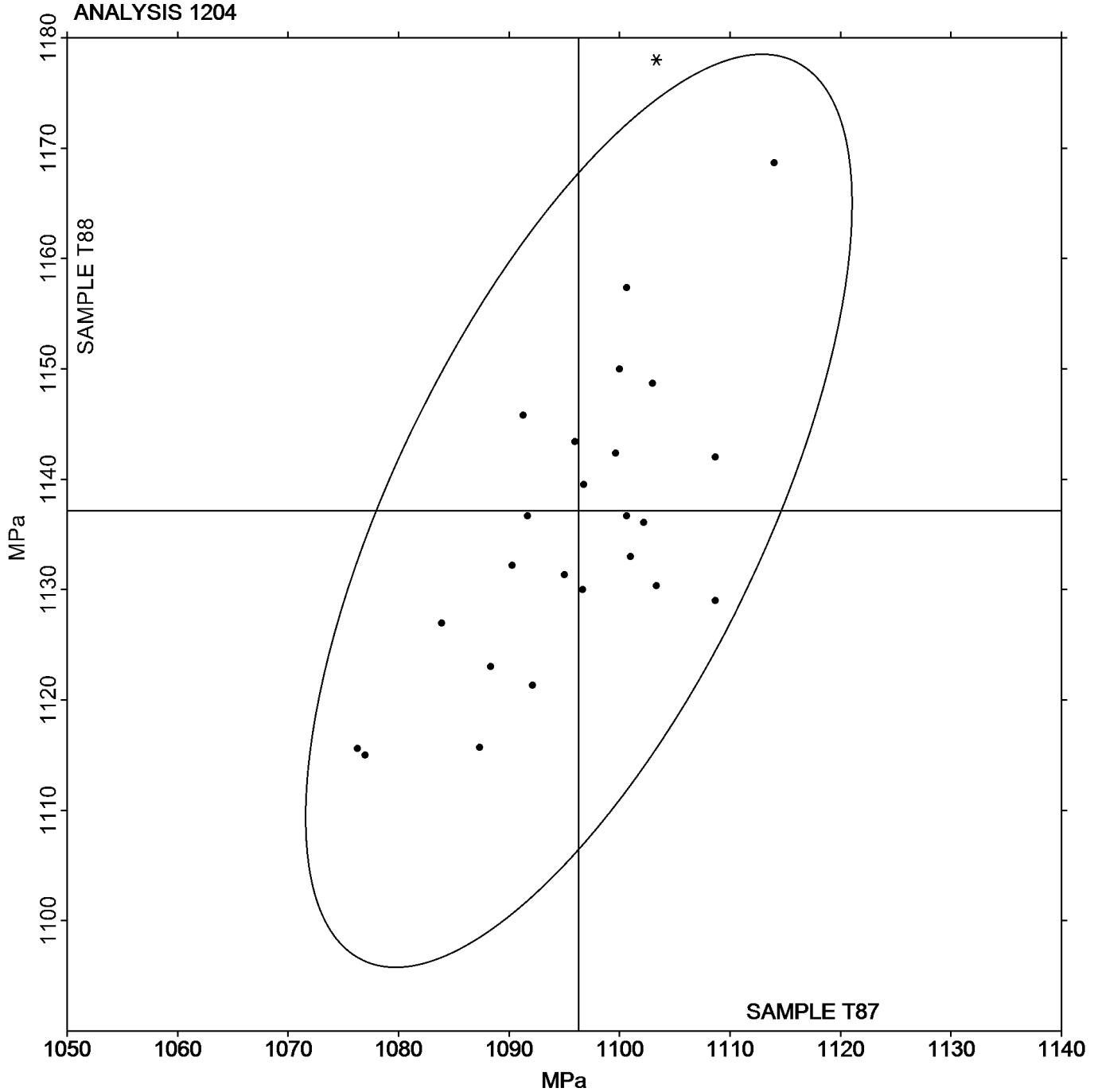
Fastener Axial Tensile - Metric
ASTM F606M

SAMPLE T87

1,096 MPa

SAMPLE T88

1,137 MPa





Fasteners and Metals Interlaboratory Testing Program

Analysis 1210

Cycle 140
4th Qtr 2022

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

WebCode	Data Flag	Sample G87			Sample G88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2V6J8M		37.48	0.51	0.98	37.07	0.15	0.24
2XVJRC	*	38.45	1.48	2.82	38.71	1.79	2.80
34BWN4		37.05	0.08	0.16	35.88	-1.04	-1.62
3LW69R		36.51	-0.46	-0.87	37.35	0.43	0.67
3VVZYW		37.05	0.08	0.15	37.45	0.53	0.83
3YGR9R		36.82	-0.15	-0.29	36.87	-0.05	-0.08
6B7CKZ		36.80	-0.17	-0.32	36.51	-0.41	-0.64
6E7GGT		37.01	0.04	0.08	36.97	0.05	0.08
6NCJJ6		37.82	0.85	1.63	37.78	0.86	1.34
73PDAL		36.97	0.00	0.00	37.01	0.09	0.14
8GJ6KN		36.27	-0.70	-1.34	36.47	-0.45	-0.71
8R7CCQ		37.20	0.23	0.44	36.44	-0.48	-0.75
9RFNKF		37.18	0.21	0.39	37.12	0.20	0.31
ADTVA2		38.02	1.05	2.00	37.92	1.00	1.56
AXMENL		37.39	0.42	0.81	36.94	0.02	0.04
B2ZRPK		37.00	0.03	0.06	35.85	-1.07	-1.67
BGPLD6		36.94	-0.03	-0.05	37.23	0.31	0.48
BRMP7R	X	35.04	-1.93	-3.68	33.20	-3.71	-5.81
C34TZH		37.11	0.14	0.26	36.98	0.06	0.09
C4FEZ7		37.14	0.17	0.32	36.00	-0.92	-1.44
CL2W4D		37.52	0.55	1.05	37.53	0.61	0.96
CPYNXW		36.93	-0.04	-0.07	37.13	0.21	0.33
DDJ37M		37.65	0.68	1.29	37.73	0.81	1.26
EPDQKM		36.83	-0.14	-0.27	36.66	-0.26	-0.40
F6MYVY		37.60	0.63	1.20	37.40	0.48	0.75
F7YETW		37.02	0.05	0.09	37.11	0.19	0.29
F867EH		36.44	-0.53	-1.01	36.93	0.01	0.02
FGGZV7		37.03	0.06	0.12	36.66	-0.26	-0.40
FXG9PX		37.16	0.19	0.36	37.26	0.34	0.54
FZ6QMP		36.77	-0.20	-0.38	36.73	-0.19	-0.30
G8PXAN		36.75	-0.22	-0.42	37.19	0.27	0.42
GKD3GK		36.88	-0.09	-0.17	37.21	0.29	0.45
GQJXU		37.09	0.12	0.22	37.26	0.34	0.53
HJCTHZ		37.51	0.54	1.02	36.70	-0.22	-0.34
HY3QKG		37.45	0.48	0.92	37.21	0.29	0.45
JBGX6N		36.92	-0.05	-0.10	35.91	-1.01	-1.58
JLXWNC		36.49	-0.48	-0.91	36.10	-0.82	-1.28
JY6L6L		37.41	0.44	0.85	37.24	0.32	0.50
KA2983		37.64	0.67	1.29	37.50	0.58	0.91
KPVFL4		36.64	-0.33	-0.64	36.53	-0.39	-0.61
KVWWUN		37.19	0.22	0.42	37.04	0.12	0.18
L96XAE		36.38	-0.59	-1.13	36.68	-0.24	-0.37
LFZ2WN		36.43	-0.54	-1.03	35.77	-1.15	-1.80
LGTZVA		36.68	-0.29	-0.55	36.36	-0.56	-0.87
LQMVEC		36.95	-0.02	-0.04	37.52	0.60	0.94
ME28VX		37.07	0.10	0.20	36.86	-0.06	-0.09
N2VD77		35.78	-1.19	-2.27	35.97	-0.95	-1.49



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

**Cycle 140
4th Qtr 2022**

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

WebCode	Data Flag	Sample G87			Sample G88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
N3LRAA		35.99	-0.98	-1.88	36.33	-0.59	-0.93
NNPF27		36.50	-0.47	-0.90	36.00	-0.92	-1.44
NPMQX9		37.21	0.24	0.46	36.28	-0.64	-1.00
NZUX6F		35.99	-0.98	-1.87	36.28	-0.64	-1.00
QEWNNC		36.89	-0.08	-0.16	36.51	-0.41	-0.64
QK2UWN		37.44	0.47	0.91	37.93	1.01	1.58
QKX8JF	X	35.69	-1.28	-2.45	37.13	0.21	0.32
QW9NEE		37.02	0.05	0.10	37.42	0.50	0.78
R3DXX7		35.79	-1.18	-2.25	35.64	-1.28	-2.00
R8RBZE		36.34	-0.63	-1.20	37.21	0.29	0.46
RMGLLV		37.51	0.54	1.04	37.73	0.81	1.26
T2XWQX		36.75	-0.22	-0.42	36.50	-0.42	-0.66
TQTP3		36.60	-0.37	-0.71	36.43	-0.49	-0.77
U3MPXZ		36.91	-0.06	-0.11	36.61	-0.31	-0.48
UAA9PG		36.16	-0.81	-1.56	36.06	-0.86	-1.35
V8YWX6		37.11	0.14	0.27	37.16	0.24	0.37
VGZGZX		37.44	0.47	0.89	37.55	0.63	0.99
VKYTZ4		36.35	-0.62	-1.18	36.21	-0.71	-1.11
VX996N		37.49	0.52	0.99	38.27	1.35	2.11
W9P7XX		37.26	0.29	0.56	37.43	0.51	0.79
XYT3L3		36.49	-0.48	-0.92	36.76	-0.16	-0.26
Y49HB8		37.11	0.14	0.27	37.44	0.52	0.82
YDACX4	*	35.70	-1.27	-2.43	36.35	-0.57	-0.89
YKWXAW		37.44	0.47	0.89	38.00	1.08	1.69
YVDM6V		37.21	0.24	0.46	36.74	-0.18	-0.28
ZLJ2C3		37.30	0.33	0.63	37.66	0.74	1.16
ZR7NBE		37.39	0.42	0.81	36.99	0.07	0.12

Summary Statistics		Sample G87		Sample G88	
Grand Means		36.97	HRC	36.92	HRC
Std Dev Btwn Labs		0.52	HRC	0.64	HRC

Samples G87, G88 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/4

Statistics based on 72 of 74 reporting participants

Comments on Assigned Data Flags for Test #1210

BRMP7R (X) - Data for both samples are low. Inconsistent within the determinations of sample G88.

QKX8JF (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample G87.



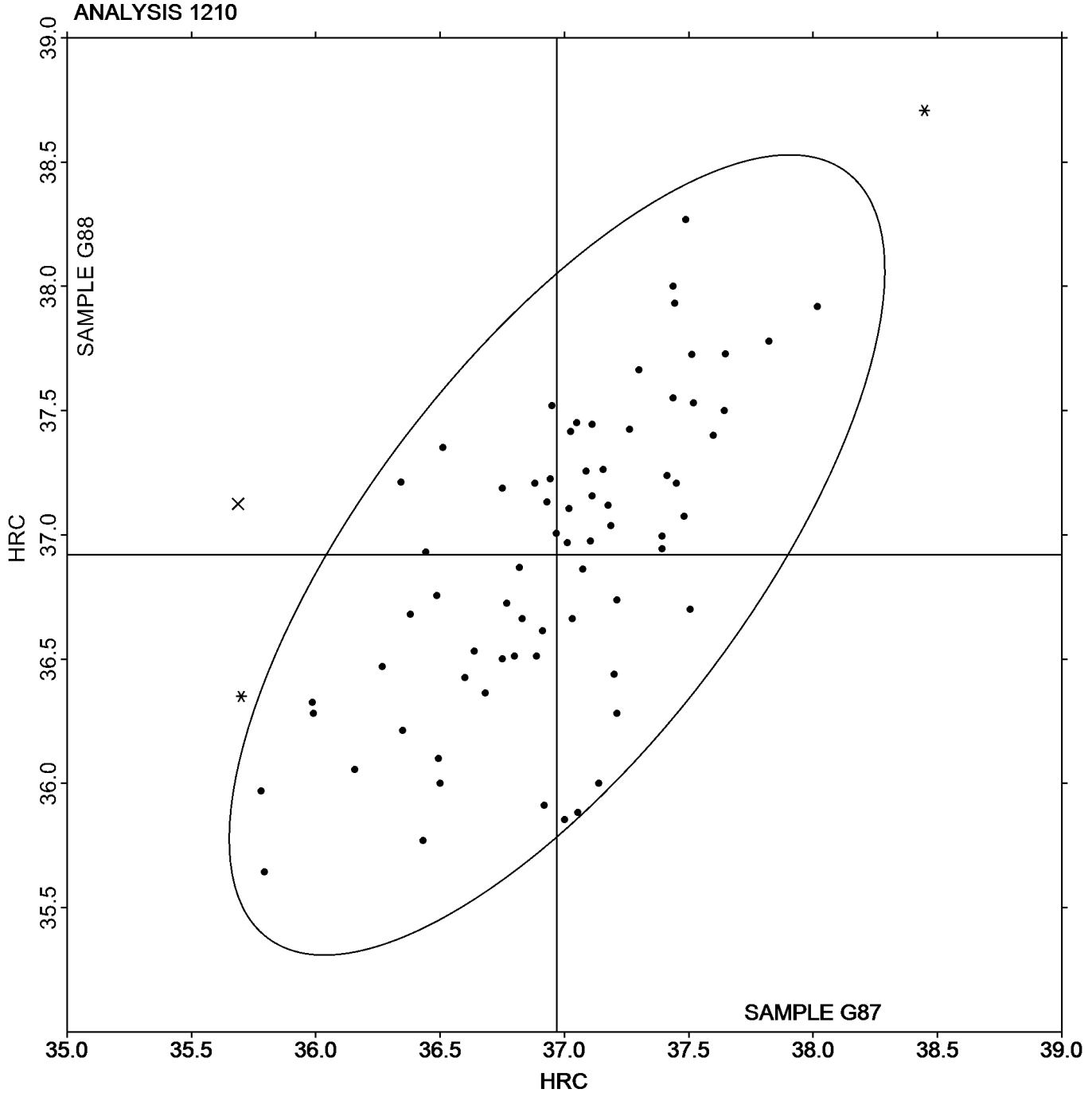
Fasteners and Metals Interlaboratory Testing Program
Analysis 1210

Cycle 140
4th Qtr 2022

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

SAMPLE G87
36.97 HRC

SAMPLE G88
36.92 HRC





Fasteners and Metals Interlaboratory Testing Program

Analysis 1211

Cycle 140
4th Qtr 2022

Vickers Hardness: Externally Threaded Fasteners ASTM E92

WebCode	Data Flag	Sample V87			Sample V88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
34BWN4		372.75	7.35	0.85	370.44	5.39	0.83
3GVCQ4		366.45	1.05	0.12	364.48	-0.57	-0.09
4EATEX		356.59	-8.80	-1.02	355.66	-9.39	-1.44
6B7CKZ		381.94	16.54	1.91	374.38	9.33	1.43
6E7GGT		370.19	4.79	0.55	369.06	4.01	0.61
82PHH3		372.19	6.79	0.78	367.25	2.20	0.34
A8N4ZG		357.56	-7.84	-0.90	360.00	-5.05	-0.77
ADTVA2		376.61	11.21	1.29	375.18	10.13	1.55
AXMENL		367.19	1.79	0.21	370.69	5.64	0.86
BGPLD6		372.29	6.89	0.79	368.43	3.38	0.52
CL2W4D		375.12	9.72	1.12	372.75	7.70	1.18
CWHQ6Y		363.69	-1.71	-0.20	362.38	-2.67	-0.41
E7HYZN		356.69	-8.71	-1.00	360.88	-4.17	-0.64
EPDQKM		376.81	11.41	1.32	367.63	2.58	0.40
F6MYV		358.16	-7.24	-0.84	363.51	-1.54	-0.24
FTBGK8	*	350.56	-14.84	-1.71	346.88	-18.17	-2.79
GT7EBT		364.25	-1.15	-0.13	362.94	-2.11	-0.32
HZWL4H		365.19	-0.21	-0.02	365.06	0.01	0.00
JFKTJ		356.81	-8.59	-0.99	360.69	-4.36	-0.67
KA2983		369.19	3.79	0.44	367.94	2.89	0.44
LUHVDV		361.60	-3.80	-0.44	360.35	-4.70	-0.72
RHNPMJ		362.37	-3.03	-0.35	365.57	0.52	0.08
RJ4YTC		365.81	0.41	0.05	372.88	7.83	1.20
TQYTP3		375.99	10.59	1.22	369.76	4.71	0.72
VLV4XR		344.99	-20.40	-2.35	354.49	-10.56	-1.62
WM4MA9		367.06	1.66	0.19	366.76	1.71	0.26
XYT3L3		355.81	-9.59	-1.11	357.00	-8.05	-1.23
ZBZE8V		367.31	1.91	0.22	368.38	3.33	0.51

Summary Statistics		<u>Sample V87</u>		<u>Sample V88</u>	
Grand Means		365.40	HV	365.05	HV
Std Dev Btwn Labs		8.67	HV	6.52	HV

Samples V87, V88 : 1/2-20 x 2 1/4, 1/2-20 x 2 1/4

Statistics based on 28 of 28 reporting participants



Analysis 1211

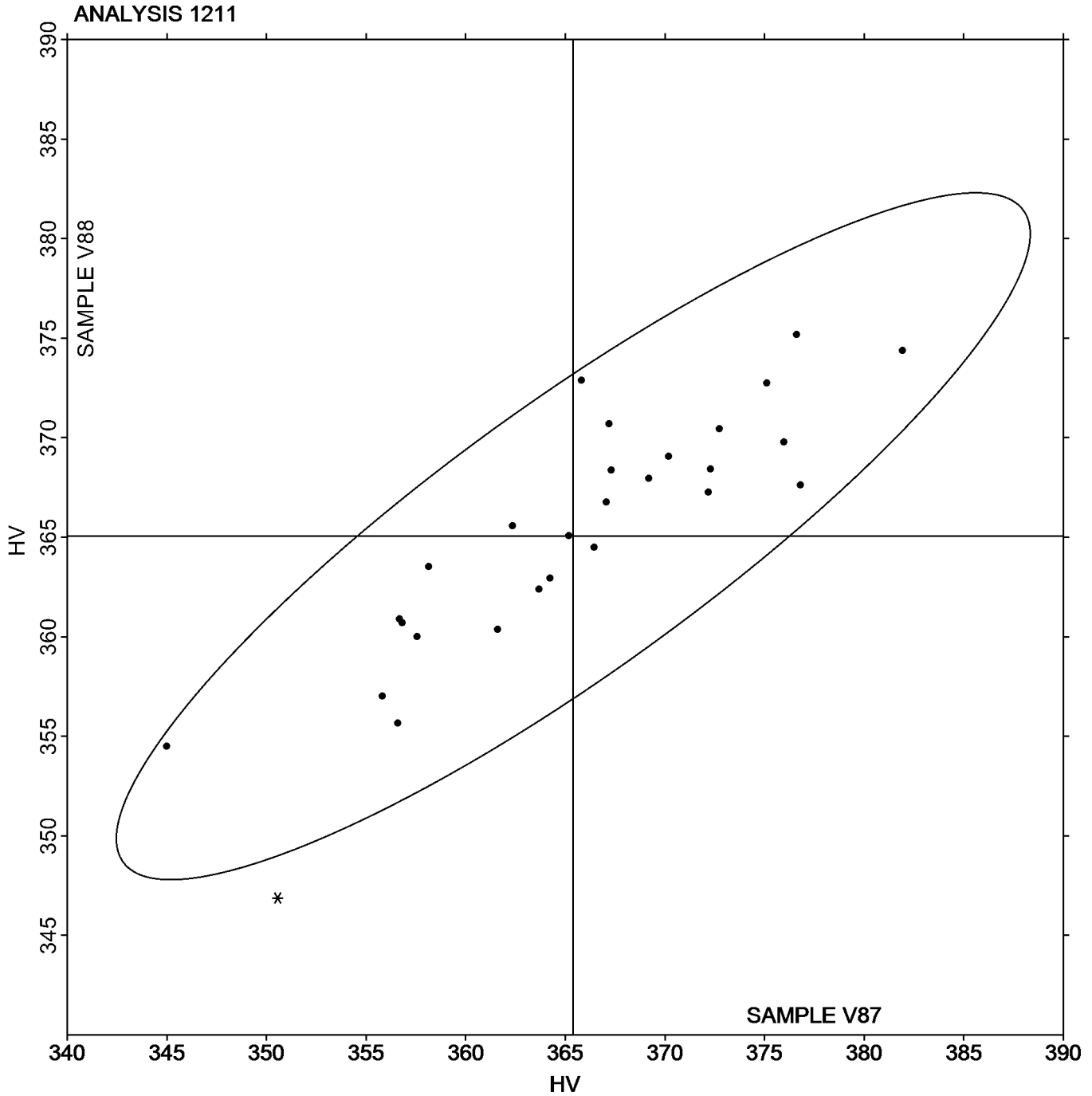
Vickers Hardness: Externally Threaded Fasteners
ASTM E92

SAMPLE V87

SAMPLE V88

365.40 HV

365.05 HV





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1220

Fastener Double Shear
NASM 1312-13

WebCode	Data Flag	Sample Z87			Sample Z88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2V6J8M		18,892	293	0.62	18,440	305	0.68
34BWN4		18,431	-168	-0.35	17,809	-326	-0.72
3LW69R		18,270	-329	-0.70	17,745	-389	-0.86
3YGR9R		18,463	-136	-0.29	18,205	70	0.15
AXMENL		17,922	-677	-1.43	17,668	-467	-1.04
C34TZH		17,867	-732	-1.55	17,167	-968	-2.15
D8YT47	X	14,500	-4,099	-8.67	14,563	-3,572	-7.92
D9CADC		18,133	-466	-0.98	17,733	-401	-0.89
DDJ37M		19,610	1,011	2.14	19,190	1,055	2.34
DY28RC		18,467	-132	-0.28	18,167	32	0.07
FZ6QMP		18,403	-196	-0.41	17,941	-194	-0.43
HJCTHZ		19,068	469	0.99	18,691	556	1.23
HL2YXQ		18,629	30	0.06	18,022	-112	-0.25
JLXWNC	*	19,413	814	1.72	18,406	271	0.60
JY6L6L		18,707	108	0.23	18,259	125	0.28
NPMQX9		18,903	304	0.64	18,200	65	0.14
QKX8JF		18,252	-347	-0.73	17,995	-140	-0.31
VX996N		18,403	-196	-0.42	18,221	86	0.19
YVDM6V		18,948	349	0.74	18,568	433	0.96

Summary Statistics

	Sample Z87		Sample Z88	
Grand Means	18,599	1b	18,135	1b
Stnd Dev Btwn Labs	473	1b	451	1b

Samples Z87, Z88 : 3/8-16 x 2 1/4, 3/8-16 x 2 1/2

Statistics based on 18 of 19 reporting participants

Comments on Assigned Data Flags for Test #1220

D8YT47 (X) - Data for both samples are low. Possible Systematic Error.



Analysis 1220

Fastener Double Shear

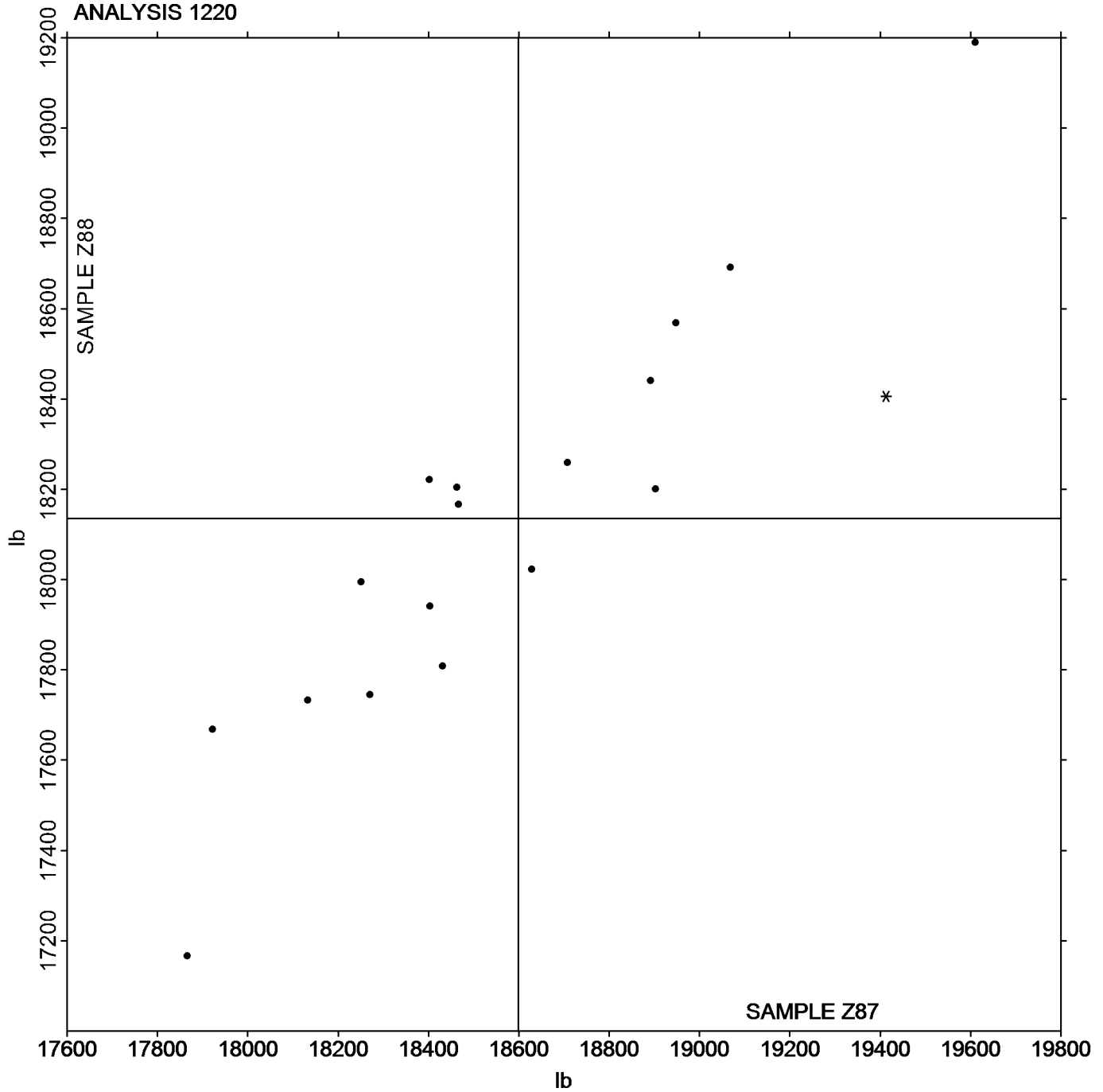
NASM 1312-13

SAMPLE Z87

SAMPLE Z88

18,599 lb

18,135 lb





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1303

Rockwell Hardness: C Scale
ASTM E18

WebCode	Data Flag	Sample E87			Sample E88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2HZBLX		56.26	0.22	0.47	59.96	0.04	0.11
2LFNCZ		56.38	0.34	0.73	60.08	0.16	0.40
33GXR4		56.24	0.20	0.43	60.04	0.12	0.30
37G48W		56.44	0.40	0.86	60.22	0.30	0.74
3ZD6TY		55.90	-0.14	-0.31	60.12	0.20	0.49
42WQTY		56.20	0.16	0.34	60.00	0.08	0.20
6B7CKZ		55.70	-0.34	-0.75	59.58	-0.34	-0.81
6H8HJB		55.78	-0.26	-0.57	59.84	-0.08	-0.18
6KUJ4P		56.00	-0.04	-0.10	60.00	0.08	0.20
6NCJJ6		55.72	-0.32	-0.69	59.89	-0.03	-0.06
6QTUAU		56.20	0.16	0.34	59.80	-0.12	-0.28
6YEWLQ		55.96	-0.08	-0.18	59.92	0.00	0.01
7R9END		56.17	0.13	0.27	60.01	0.09	0.23
9JG7UW	X	54.60	-1.44	-3.13	58.25	-1.67	-4.02
9NEMGC	X	72.28	16.24	35.25	76.28	16.36	39.49
9ZP8KR		56.50	0.46	0.99	60.02	0.10	0.25
AKVVU4		56.01	-0.04	-0.08	60.16	0.25	0.60
BMUKM9		56.06	0.02	0.04	59.60	-0.32	-0.76
BQCW7X	*	56.60	0.56	1.21	59.80	-0.12	-0.28
CL2W4D		56.38	0.34	0.73	60.56	0.64	1.56
CRA83Y		56.14	0.10	0.21	60.46	0.54	1.31
EGX6C7		55.60	-0.44	-0.96	59.70	-0.22	-0.52
ERJ2V6	X	56.22	0.18	0.38	58.50	-1.42	-3.41
F8BCZL	*	54.78	-1.26	-2.74	59.02	-0.90	-2.16
FZ6QMP		55.86	-0.18	-0.40	59.72	-0.20	-0.47
FZBW9T		56.30	0.26	0.56	60.32	0.40	0.98
GG9P4R		56.46	0.42	0.90	60.24	0.32	0.78
HN4ZZ9		55.68	-0.36	-0.79	59.62	-0.30	-0.71
HP2BVB		55.06	-0.98	-2.14	59.46	-0.46	-1.10
HZCTAM		55.30	-0.74	-1.61	59.20	-0.72	-1.73
JPARHM	X	56.70	0.66	1.42	59.40	-0.52	-1.24
KDLVBN		55.84	-0.20	-0.44	59.78	-0.14	-0.33
KJKRL8		56.20	0.15	0.33	60.09	0.17	0.41
KRU7AG	X	52.72	-3.32	-7.21	58.97	-0.95	-2.28
KVZ82T		56.20	0.16	0.34	60.20	0.28	0.69
KX7WYV		56.92	0.88	1.90	60.88	0.96	2.33
L9XVDE		55.50	-0.54	-1.18	59.60	-0.32	-0.76
LZQ2DK	X	55.96	-0.08	-0.18	60.86	0.94	2.28
M789QW		55.84	-0.20	-0.44	59.48	-0.44	-1.05
MUFNFK		56.22	0.18	0.38	60.00	0.08	0.20
MW7EBY		55.42	-0.62	-1.35	59.74	-0.18	-0.42
NDG3CC		56.60	0.56	1.21	60.00	0.08	0.20
NDQQXQ		55.50	-0.54	-1.18	59.72	-0.20	-0.47
NQ8PQK		55.26	-0.78	-1.70	59.32	-0.60	-1.44
NQUXZN		56.15	0.10	0.22	59.89	-0.02	-0.06
NZGXLD	*	56.84	0.80	1.73	60.96	1.04	2.52
P6TA97		55.94	-0.10	-0.23	60.40	0.48	1.17



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1303

Rockwell Hardness: C Scale
ASTM E18

WebCode	Data Flag	Sample E87			Sample E88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
PCE6AA		55.72	-0.32	-0.70	59.80	-0.12	-0.28
PCNEUG		56.04	0.00	-0.01	59.72	-0.20	-0.47
PPCDM6		55.40	-0.64	-1.40	59.00	-0.92	-2.21
PRY9XP		56.40	0.36	0.77	59.80	-0.12	-0.28
PV8727		55.52	-0.52	-1.14	59.62	-0.30	-0.71
PZETDA		55.70	-0.34	-0.75	59.80	-0.12	-0.28
QAZ9RA		55.76	-0.28	-0.62	59.60	-0.32	-0.76
QEWNNC		56.06	0.02	0.04	60.04	0.12	0.30
QNCUX9	*	56.86	0.82	1.77	60.04	0.12	0.30
QU4Y3J		56.14	0.10	0.21	60.02	0.10	0.25
QWCBRM		56.48	0.44	0.95	59.96	0.04	0.11
QWRN8W		55.66	-0.38	-0.83	59.38	-0.54	-1.29
QX7QHB		56.08	0.04	0.08	60.20	0.28	0.69
RQNVZ8	X	57.08	1.04	2.25	61.48	1.56	3.78
RWCCEJ		55.62	-0.42	-0.92	59.48	-0.44	-1.05
RXHHLH		56.90	0.86	1.86	60.50	0.58	1.41
T2XWQX		55.80	-0.24	-0.53	59.60	-0.32	-0.76
T6Y6TM		55.64	-0.40	-0.87	59.39	-0.53	-1.27
TWYKP7	X	54.50	-1.54	-3.35	59.87	-0.04	-0.10
UGPVEQ		55.82	-0.22	-0.49	59.88	-0.04	-0.09
UJCLLB	X	54.50	-1.54	-3.35	59.30	-0.62	-1.48
UUBH46		56.32	0.28	0.60	59.82	-0.10	-0.23
UVPRFP		55.53	-0.52	-1.12	59.38	-0.53	-1.28
UZFD7D		55.68	-0.36	-0.79	59.18	-0.74	-1.77
VU93LB		56.22	0.18	0.38	60.22	0.30	0.74
VX996N		56.14	0.10	0.21	60.38	0.46	1.12
WC42CB		56.40	0.36	0.77	60.06	0.14	0.35
WCL4XP		56.20	0.16	0.34	60.24	0.32	0.78
WDAQ9E	*	57.10	1.06	2.29	61.02	1.10	2.67
WFN37W		56.45	0.40	0.88	60.26	0.34	0.82
WNXBR4		56.58	0.54	1.16	60.54	0.62	1.51
WXZT38		55.44	-0.60	-1.31	59.58	-0.34	-0.81
WYUGL3		56.10	0.06	0.12	59.84	-0.08	-0.18
XQJFZ2		56.10	0.06	0.12	59.84	-0.08	-0.18
XYF7TP		55.88	-0.16	-0.36	59.78	-0.14	-0.33
Y2EWCB		57.10	1.06	2.29	60.50	0.58	1.41
YPN388		56.08	0.04	0.08	60.12	0.20	0.49
Z2CTYP		55.88	-0.16	-0.36	59.72	-0.20	-0.47
Z4EJ7Q		56.72	0.67	1.46	60.42	0.50	1.21
ZHCP98		55.48	-0.56	-1.22	59.02	-0.90	-2.16
ZKLT4J		56.36	0.32	0.69	60.16	0.24	0.59



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1303

Rockwell Hardness: C Scale
ASTM E18

Summary Statistics

	<u>Sample E87</u>		<u>Sample E88</u>	
Grand Means	56.04	HRC	59.92	HRC
Stnd Dev Btwn Labs	0.46	HRC	0.41	HRC

Samples E87, E88 : Steel, Steel

Statistics based on 79 of 88 reporting participants

Comments on Assigned Data Flags for Test #1303

- 9JG7UW (X) - Data for both samples are low. Possible Systematic Error.
- 9NEMGC (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.
- ERJ2V6 (X) - Data for sample E88 are low.
- JPARHM (X) - Inconsistent in testing between samples.
- KRU7AG (X) - Data for sample E87 are low. Inconsistent within the determinations of sample E87.
- LZQ2DK (X) - Inconsistent in testing between samples.
- RQNVZ8 (X) - Data for sample E88 are high.
- TWYKP7 (X) - Data for sample E87 are low.
- UJCLLB (X) - Data for sample E87 are low. Inconsistent within the determinations of both samples.



Analysis 1303

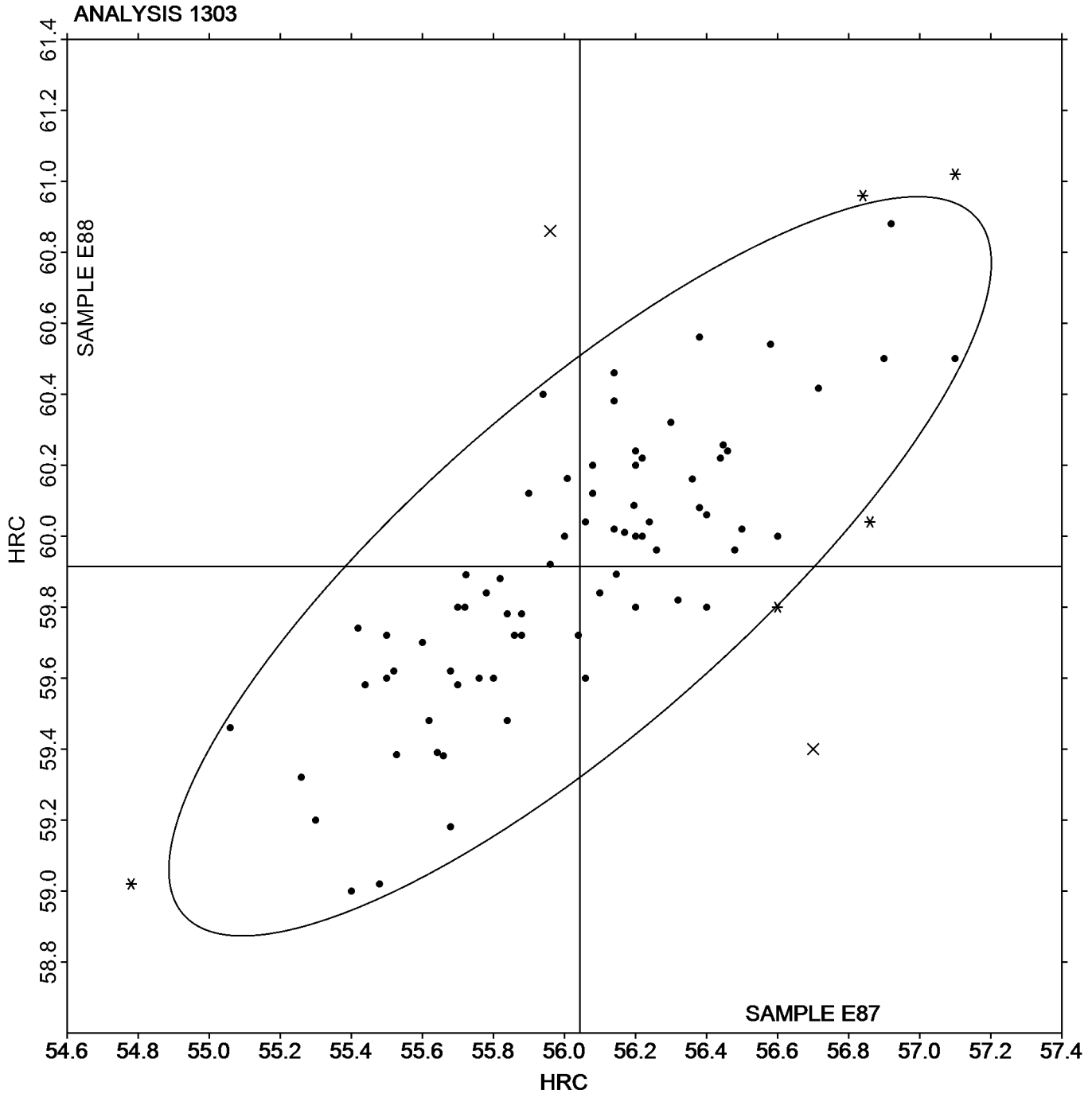
Rockwell Hardness: C Scale
ASTM E18

SAMPLE E87

SAMPLE E88

56.04 HRC

59.92 HRC





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

WebCode	Data Flag	Sample E87			Sample E88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
CL2W4D		568.20	-20.98	-0.85	702.80	4.69	0.23
EAGGXG		555.40	-33.78	-1.37	657.80	-40.31	-1.95
ERJ2V6		603.40	14.22	0.58	690.60	-7.51	-0.36
F8BCZL		566.80	-22.38	-0.91	701.46	3.35	0.16
JVH9VH		580.28	-8.90	-0.36	702.52	4.41	0.21
KRU7AG		612.60	23.42	0.95	696.60	-1.51	-0.07
LCVGTB		616.00	26.82	1.09	747.00	48.89	2.36
TXER4M		590.20	1.02	0.04	692.40	-5.71	-0.28
V28TVF		632.10	42.92	1.74	701.23	3.12	0.15
Y43KHA		590.84	1.66	0.07	687.88	-10.23	-0.50
YPN388		565.14	-24.04	-0.98	698.96	0.85	0.04

Summary Statistics

	Sample E87		Sample E88	
Grand Means	589.18	HV 10	698.11	HV 10
Stnd Dev Btwn Labs	24.61	HV 10	20.67	HV 10

Samples E87, E88 : Steel, Steel

Statistics based on 11 of 11 reporting participants

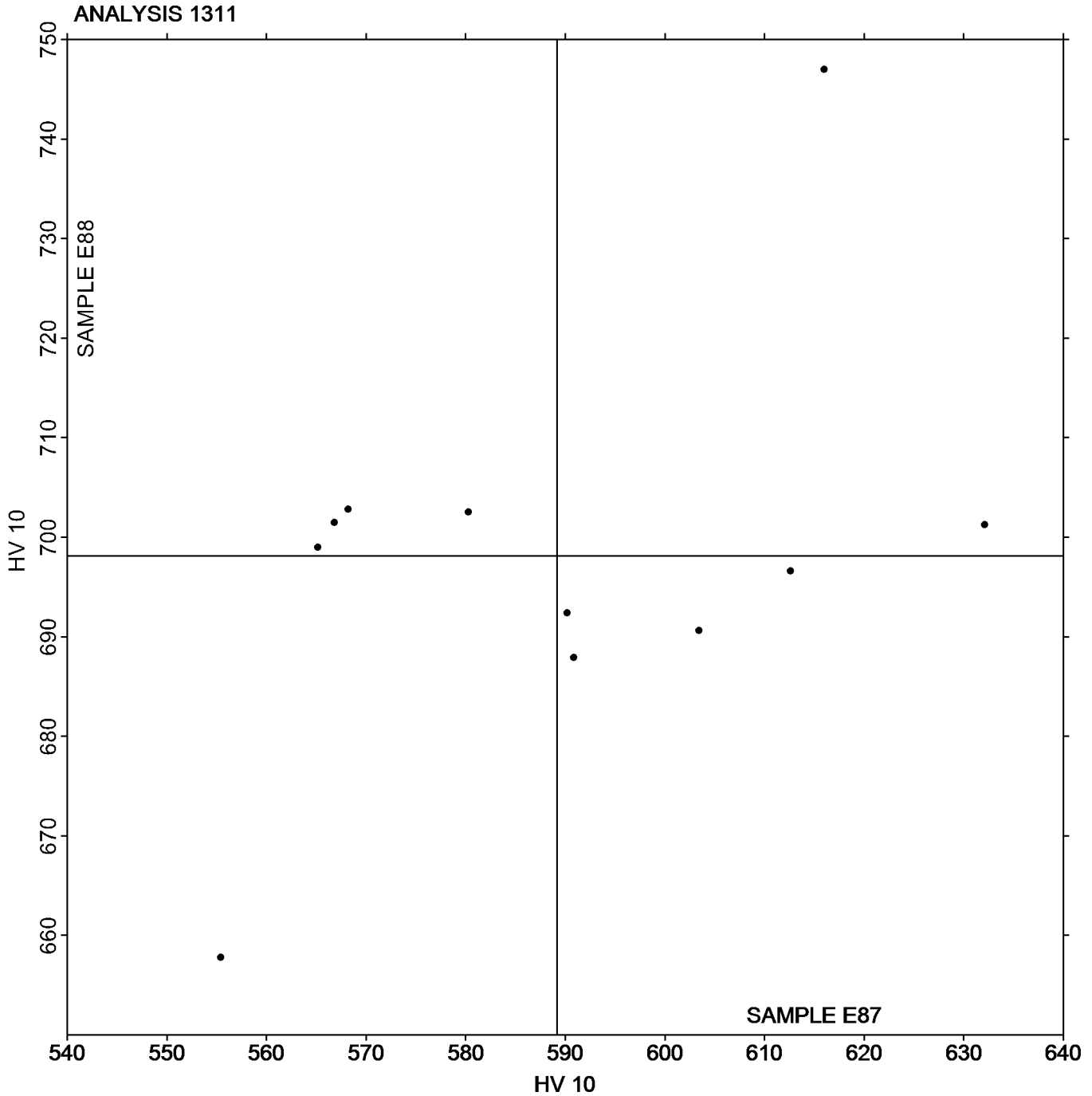


Analysis 1311

Vickers Hardness 10 kgf
ASTM E92, ISO 6507-1

SAMPLE E87
589.18 HV 10

SAMPLE E88
698.11 HV 10





Fasteners and Metals Interlaboratory Testing Program
Analysis 1341
Brinell Hardness
ASTM E10

Cycle 140
4th Qtr 2022

WebCode	Data Flag	Sample D85			Sample D86		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
2FA69U		331.60	8.48	1.47	301.80	0.33	0.07
2HZBLX	X	337.00	13.88	2.41	302.00	0.53	0.11
333QGV		318.44	-4.68	-0.81	297.04	-4.43	-0.89
33KK4B		320.80	-2.32	-0.40	301.00	-0.47	-0.09
3GVCQ4		329.00	5.88	1.02	309.00	7.53	1.51
3ZD6TY		320.40	-2.72	-0.47	302.40	0.93	0.19
44T33L		326.72	3.60	0.63	305.64	4.17	0.84
4CF6V2		315.40	-7.72	-1.34	297.80	-3.67	-0.73
4M3ZW3		323.60	0.48	0.08	299.80	-1.67	-0.33
4XJQQT		321.00	-2.12	-0.37	302.00	0.53	0.11
6FXQ82		319.80	-3.32	-0.58	300.80	-0.67	-0.13
6GC4XJ		325.40	2.28	0.40	302.80	1.33	0.27
6VXJ2H		321.00	-2.12	-0.37	293.00	-8.47	-1.70
7DQQLU		326.00	2.88	0.50	302.00	0.53	0.11
87N3BT		331.00	7.88	1.37	302.00	0.53	0.11
8BDKN6		320.60	-2.52	-0.44	302.00	0.53	0.11
9VK7YQ		326.80	3.68	0.64	300.80	-0.67	-0.13
AKVVU4		319.40	-3.72	-0.65	298.20	-3.27	-0.65
BMUKM9		327.08	3.96	0.69	305.36	3.89	0.78
BWMKLM		327.20	4.08	0.71	303.80	2.33	0.47
CHKJ8W		326.00	2.88	0.50	304.60	3.13	0.63
CVC6RL		322.80	-0.32	-0.06	305.40	3.93	0.79
CXWZEY		321.00	-2.12	-0.37	291.80	-9.67	-1.94
D8YT47		322.60	-0.52	-0.09	299.60	-1.87	-0.37
DJNW4P		328.80	5.68	0.99	302.00	0.53	0.11
DKJ6G2		333.22	10.09	1.75	310.13	8.67	1.74
EAGGXG		322.20	-0.92	-0.16	298.00	-3.47	-0.69
EGX6C7		321.00	-2.12	-0.37	302.00	0.53	0.11
EGZPJ8		323.40	0.28	0.05	299.60	-1.87	-0.37
EVL6M7		321.94	-1.19	-0.21	298.94	-2.52	-0.51
F6MYV	*	308.00	-15.12	-2.63	293.00	-8.47	-1.70
F9JLRJ		326.00	2.88	0.50	302.00	0.53	0.11
FRYQBH		331.00	7.88	1.37	302.00	0.53	0.11
GAAY4A		330.56	7.44	1.29	308.90	7.43	1.49
GPLDCM		318.62	-4.50	-0.78	301.12	-0.34	-0.07
HHNZ87	*	329.20	6.08	1.06	296.20	-5.27	-1.06
HL2YXQ		329.00	5.88	1.02	307.40	5.93	1.19
HWZLB4		321.20	-1.92	-0.33	302.60	1.13	0.23
JCE4ZB		322.20	-0.92	-0.16	301.60	0.13	0.03
JXQ4RV	*	318.40	-4.72	-0.82	289.60	-11.87	-2.38
KJKRL8		324.40	1.28	0.22	302.20	0.73	0.15
KWJ4N2	*	325.60	2.48	0.43	293.00	-8.47	-1.70
KX7WYV		321.00	-2.12	-0.37	302.00	0.53	0.11
L88RFT		319.00	-4.12	-0.72	298.00	-3.47	-0.69
L9XVDE		321.00	-2.12	-0.37	298.00	-3.47	-0.69
LF84T3		317.60	-5.52	-0.96	294.00	-7.47	-1.50
LWDB86	X	325.00	1.88	0.33	317.20	15.73	3.15



Fasteners and Metals Interlaboratory Testing Program
Analysis 1341
Brinell Hardness
ASTM E10

Cycle 140
4th Qtr 2022

WebCode	Data Flag	Sample D85			Sample D86		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
LZQ2DK		331.00	7.88	1.37	310.60	9.13	1.83
M8Z2TF		325.60	2.48	0.43	303.20	1.73	0.35
MUFNFK		315.40	-7.72	-1.34	292.00	-9.47	-1.90
MW7EBY	*	314.20	-8.92	-1.55	305.20	3.73	0.75
N2VD77		321.00	-2.12	-0.37	298.00	-3.47	-0.69
NB8FP2		326.60	3.48	0.60	304.00	2.53	0.51
NDG3CC		319.00	-4.12	-0.72	302.00	0.53	0.11
NL24ZF		317.26	-5.86	-1.02	301.70	0.23	0.05
NZZZCL		317.40	-5.72	-1.00	295.80	-5.67	-1.14
PHWKPZ		311.20	-11.92	-2.07	289.80	-11.67	-2.34
PK8FHJ		321.40	-1.72	-0.30	303.20	1.73	0.35
PLV3PD		312.80	-10.32	-1.79	293.40	-8.07	-1.62
PV8727		312.40	-10.72	-1.86	295.60	-5.87	-1.18
PYJZVH		321.00	-2.12	-0.37	302.40	0.93	0.19
QMTJPG	X	107.66	-215.46	-37.46	105.92	-195.55	-39.20
QWCBRM		321.88	-1.24	-0.22	297.44	-4.03	-0.81
QX7QHB		321.20	-1.92	-0.33	300.60	-0.87	-0.17
R4F9H4		321.00	-2.12	-0.37	303.60	2.13	0.43
R6GLG3		329.50	6.38	1.11	303.00	1.53	0.31
RKXMC8		329.00	5.88	1.02	312.60	11.13	2.23
T2XWQX	*	339.60	16.48	2.86	314.40	12.93	2.59
TJKBBG		321.00	-2.12	-0.37	302.00	0.53	0.11
TW3AT3		321.20	-1.92	-0.33	306.00	4.53	0.91
UGPVEQ		320.08	-3.04	-0.53	302.50	1.03	0.21
V4YGUN		321.40	-1.72	-0.30	300.00	-1.47	-0.29
VTG6HQ		321.00	-2.12	-0.37	302.00	0.53	0.11
WDMWXX		333.00	9.88	1.72	304.80	3.33	0.67
WMLUGC		318.00	-5.12	-0.89	297.00	-4.47	-0.90
WTDRN3		313.20	-9.92	-1.73	297.20	-4.27	-0.86
WVZFQF		321.40	-1.72	-0.30	303.60	2.13	0.43
WX9LCG		333.00	9.88	1.72	311.00	9.53	1.91
WXZT38	*	339.00	15.88	2.76	315.80	14.33	2.87
WYE468		321.00	-2.12	-0.37	302.00	0.53	0.11
XAXW92		321.00	-2.12	-0.37	302.00	0.53	0.11
XYT3L3		322.80	-0.32	-0.06	301.20	-0.27	-0.05
YEJ7U4		321.00	-2.12	-0.37	302.00	0.53	0.11
YKWXAW		331.00	7.88	1.37	302.00	0.53	0.11
YPN388		323.80	0.68	0.12	298.00	-3.47	-0.69
YRBQE2	X	340.90	17.78	3.09	320.60	19.13	3.84
YUKRQZ		322.40	-0.72	-0.13	300.40	-1.07	-0.21
Z2CTYP		323.00	-0.12	-0.02	305.60	4.13	0.83
Z2ED38		326.60	3.48	0.60	302.40	0.93	0.19
Z4EJ7Q	X	3.384	-319.74	-55.59	3.486	-297.98	-59.73
ZEJJ2W		321.00	-2.12	-0.37	302.00	0.53	0.11
ZJHXQM		318.60	-4.52	-0.79	298.80	-2.67	-0.53
ZKLT4J		325.48	2.36	0.41	304.14	2.67	0.54
ZLJ2C3		332.60	9.48	1.65	308.60	7.13	1.43



Fasteners and Metals Interlaboratory Testing Program
Analysis 1341
Brinell Hardness
ASTM E10

Cycle 140
4th Qtr 2022

Summary Statistics

	<u>Sample D85</u>		<u>Sample D86</u>	
Grand Means	323.12	HBW	301.47	HBW
Std Dev Btwn Labs	5.75	HBW	4.99	HBW

Samples D85, D86 : Steel, Steel

Statistics based on 89 of 94 reporting participants

Samples D85, D86 are hardness test blocks made from steel. The blocks are heat treated to hardness levels specified by CTS.

Comments on Assigned Data Flags for Test #1341

- 2HZBLX (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample D85.
- LWDB86 (X) - Data for sample D86 are high. Inconsistent within the determinations of both samples.
- QMTJPG (X) - Data for both samples are low.
- YRBQE2 (X) - Data for both samples are high.
- Z4EJ7Q (X) - Data for both samples are low.



Analysis 1341

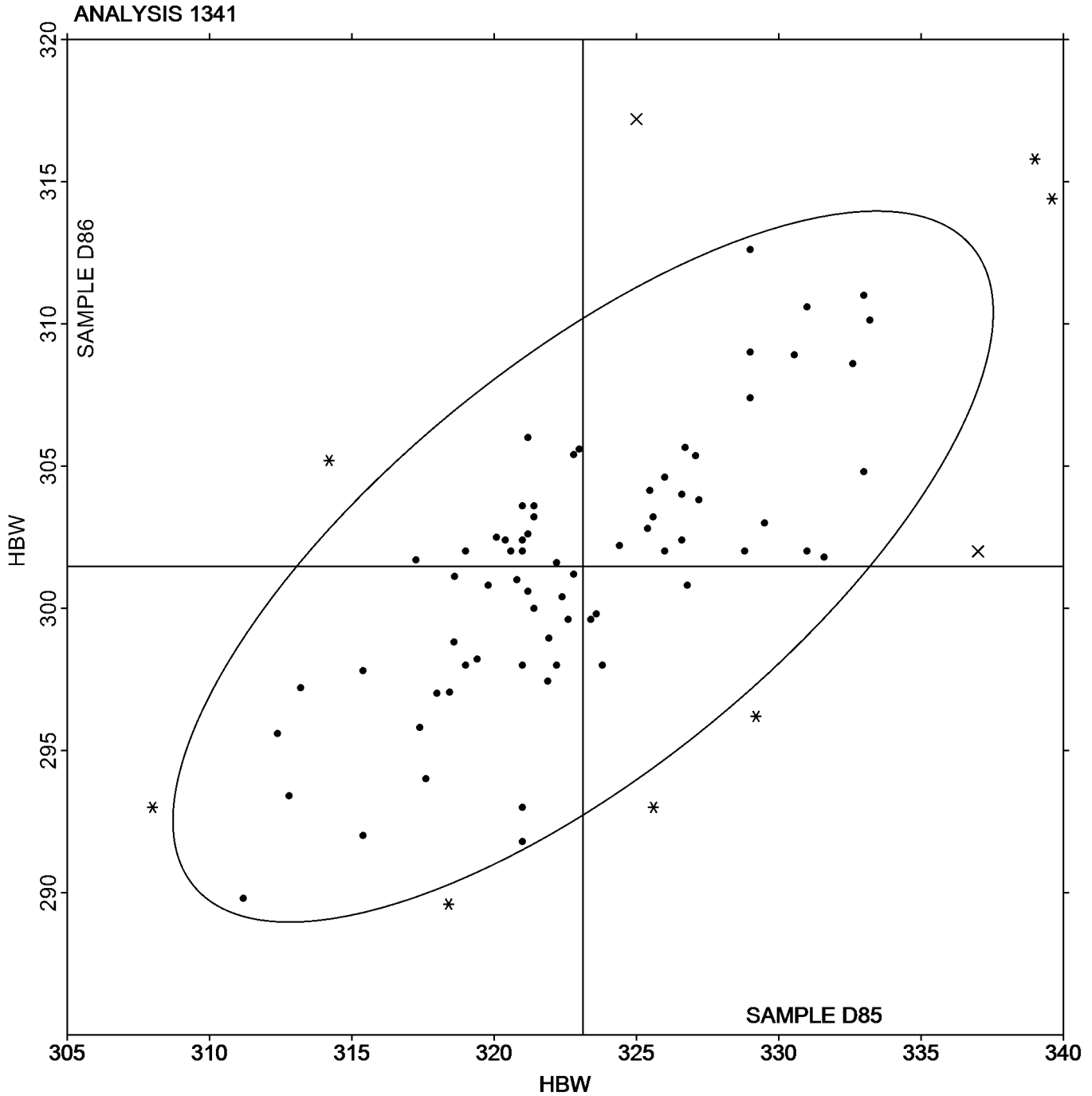
Brinell Hardness
ASTM E10

SAMPLE D85

SAMPLE D86

323.12 HBW

301.47 HBW





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1351

Rockwell Superficial Hardness (30N Scale)
ASTM E18

WebCode	Data Flag	Sample E87			Sample E88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
33KK4B		72.66	0.44	0.39	76.76	0.60	0.76
3LW69R		71.96	-0.26	-0.23	76.14	-0.02	-0.03
3YGR9R		72.14	-0.08	-0.07	75.44	-0.72	-0.93
4M3ZW3		71.95	-0.28	-0.24	76.45	0.29	0.37
4X2WY6		72.06	-0.16	-0.14	76.18	0.02	0.02
6B7CKZ	*	74.22	2.00	1.76	75.90	-0.26	-0.34
8BDKN6		72.40	0.18	0.16	76.00	-0.16	-0.21
9NEMGC	X	56.32	-15.90	-14.02	59.62	-16.54	-21.20
AT3NXG		71.94	-0.28	-0.25	76.22	0.06	0.07
BQCW7X		72.40	0.18	0.16	76.90	0.74	0.94
CHKJ8W		72.28	0.05	0.05	76.97	0.81	1.04
CPYNXW		71.88	-0.34	-0.30	76.12	-0.04	-0.06
CXWZEY	X	71.14	-1.08	-0.95	72.80	-3.36	-4.31
D3ZG2E	X	75.50	3.28	2.89	71.34	-4.82	-6.18
D4X2L7		73.56	1.34	1.18	76.40	0.24	0.30
D8YT47	*	69.64	-2.58	-2.28	73.92	-2.24	-2.87
DJNW4P		72.70	0.48	0.42	76.38	0.22	0.28
DVLF2J		72.16	-0.06	-0.05	76.02	-0.14	-0.18
EWU6NR		71.94	-0.28	-0.25	75.34	-0.82	-1.05
F22AKK		71.30	-0.92	-0.81	76.42	0.26	0.33
F867EH	*	69.50	-2.72	-2.40	74.22	-1.94	-2.49
FDTWML		72.96	0.74	0.65	75.68	-0.48	-0.62
FJZDCM		70.36	-1.86	-1.64	75.00	-1.16	-1.49
FXG9PX		71.42	-0.80	-0.71	75.76	-0.40	-0.52
GAAY4A		73.18	0.96	0.85	77.20	1.04	1.33
GK9QBF		74.06	1.84	1.62	76.54	0.38	0.48
GKD3GK		72.44	0.22	0.19	76.28	0.12	0.15
GPJRPR		73.00	0.78	0.69	76.78	0.62	0.79
GPLDCM		73.32	1.10	0.97	76.99	0.83	1.06
HCBC8U		72.48	0.26	0.23	76.52	0.36	0.46
HN4ZZ9	*	71.40	-0.82	-0.72	74.40	-1.76	-2.26
KJ7ZWW		72.52	0.30	0.26	76.34	0.18	0.23
KPVFL4		73.48	1.26	1.11	76.86	0.70	0.89
L88RFT		72.42	0.20	0.18	76.58	0.42	0.53
LYVP8J		71.80	-0.42	-0.37	76.12	-0.04	-0.06
M6EBUW		73.78	1.56	1.37	77.28	1.12	1.43
MYPJPB		71.66	-0.56	-0.49	76.14	-0.02	-0.03
N2VD77		72.20	-0.02	-0.02	76.36	0.20	0.25
N8ZGL7	X	86.58	14.36	12.66	89.28	13.12	16.81
NL24ZF		71.96	-0.26	-0.23	76.28	0.12	0.15
NPMQX9		72.02	-0.20	-0.18	76.60	0.44	0.56
NQUXZN		73.22	1.00	0.88	76.43	0.26	0.34
NTE7WF		74.30	2.08	1.83	77.60	1.44	1.84
NZUX6F		72.14	-0.08	-0.07	76.28	0.11	0.14
NZZZCL		71.10	-1.12	-0.99	76.14	-0.02	-0.03
P6TA97		72.66	0.44	0.39	77.00	0.84	1.07
PLV3PD		74.20	1.98	1.74	76.68	0.52	0.66



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1351

Rockwell Superficial Hardness (30N Scale)
ASTM E18

WebCode	Data Flag	Sample E87			Sample E88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
PRY9XP		70.86	-1.36	-1.20	75.46	-0.70	-0.90
R6GLG3		69.48	-2.74	-2.42	74.88	-1.28	-1.64
R8RBZE		71.92	-0.30	-0.27	76.62	0.46	0.59
RERV3A		71.51	-0.71	-0.63	76.23	0.07	0.09
RKXMC8		72.48	0.26	0.23	76.58	0.42	0.53
RMGLLV		70.86	-1.36	-1.20	76.48	0.32	0.41
RXHHLH		71.40	-0.82	-0.72	74.80	-1.36	-1.75
T4L9NH		72.60	0.38	0.33	76.50	0.34	0.43
UAA9PG		71.58	-0.64	-0.57	75.56	-0.60	-0.77
WVHMRQ		73.30	1.08	0.95	76.54	0.38	0.48
Y2EWCB		73.50	1.28	1.13	76.80	0.64	0.82
YJHDJ9		70.02	-2.20	-1.94	74.22	-1.94	-2.49
YYPUL8		72.50	0.28	0.25	76.30	0.14	0.18
ZCN4B9		73.84	1.62	1.43	76.70	0.54	0.69

Summary Statistics

	Sample E87		Sample E88	
Grand Means	72.22	HR30N	76.16	HR30N
Std Dev Btwn Labs	1.13	HR30N	0.78	HR30N

Samples E87, E88 : Steel, Steel

Statistics based on 57 of 61 reporting participants

Comments on Assigned Data Flags for Test #1351

- 9NEMGC (X) - Data for both samples are low.
- CXWZEY (X) - Data for sample E88 are low.
- D3ZG2E (X) - Data for sample E87 are high and data for sample E88 are low.
- N8ZGL7 (X) - Data for both samples are high.



Analysis 1351

Rockwell Superficial Hardness (30N Scale)

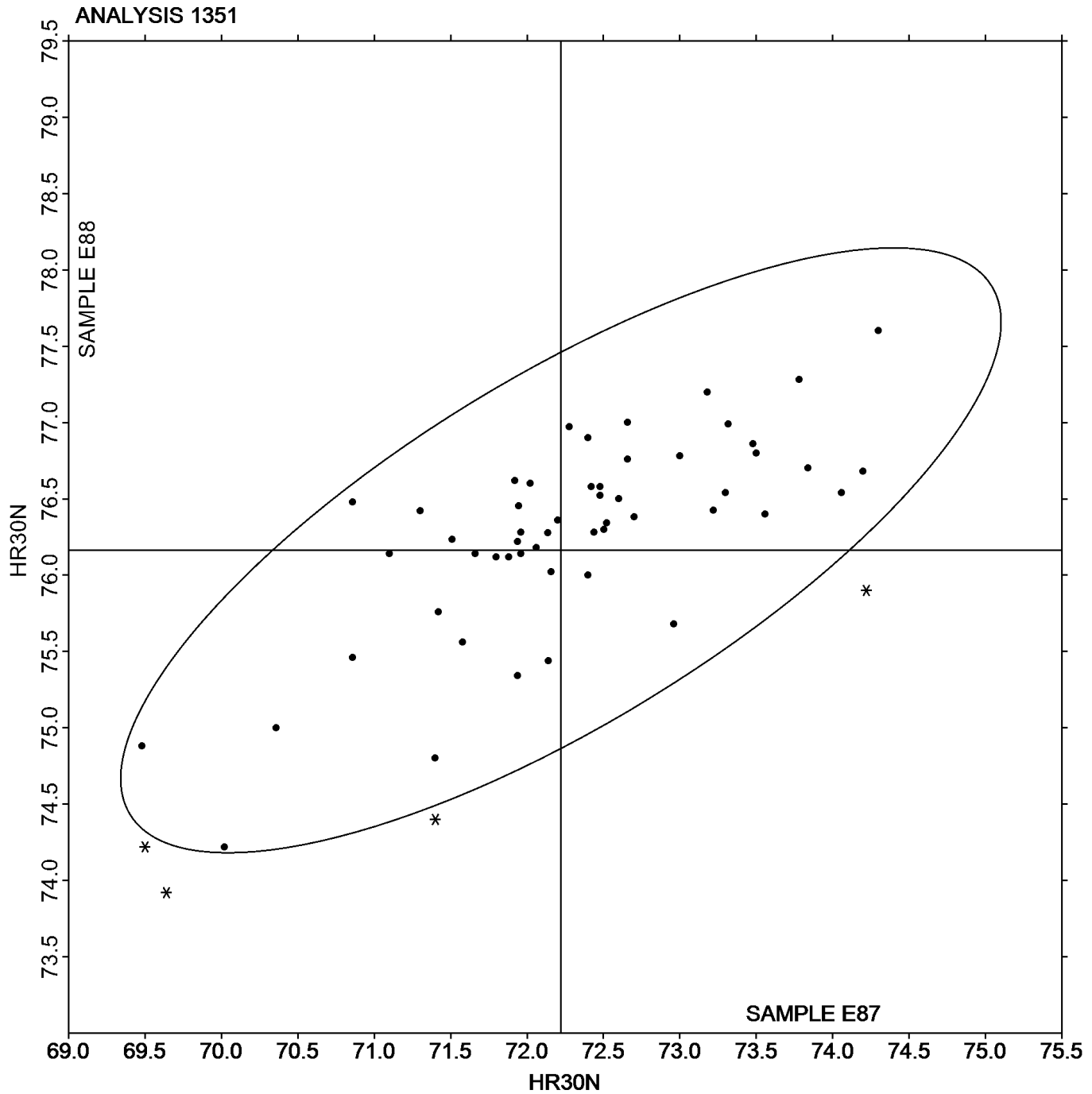
ASTM E18

SAMPLE E87

SAMPLE E88

72.22 HR30N

76.16 HR30N





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1401

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C87			Sample C88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
3RKYXC		0.0266	-0.0005	-0.14	0.0274	-0.0051	-1.08
43B9XQ		0.0265	-0.0006	-0.18	0.0298	-0.0028	-0.58
4CF6V2		0.0309	0.0038	1.06	0.0336	0.0011	0.22
6B7CKZ	X	0.0349	0.0078	2.16	0.0331	0.0006	0.12
73PDAL		0.0272	0.0001	0.03	0.0389	0.0063	1.33
7Y2U8P		0.0283	0.0012	0.33	0.0361	0.0036	0.76
7YJWXX		0.0276	0.0005	0.14	0.0358	0.0033	0.69
87N3BT		0.0235	-0.0036	-1.01	0.0305	-0.0021	-0.43
8BDKN6		0.0325	0.0054	1.49	0.0374	0.0049	1.03
A939PT		0.0244	-0.0027	-0.74	0.0322	-0.0004	-0.08
CL2W4D		0.0213	-0.0058	-1.61	0.0255	-0.0070	-1.47
DJNW4P		0.0277	0.0006	0.17	0.0307	-0.0018	-0.39
DY28RC		0.0245	-0.0026	-0.72	0.0276	-0.0050	-1.04
E7HYZN		0.0276	0.0005	0.14	0.0300	-0.0025	-0.53
ERJ2V6		0.0258	-0.0013	-0.36	0.0304	-0.0021	-0.45
F8BCZL		0.0263	-0.0008	-0.21	0.0304	-0.0021	-0.45
G8PXAN		0.0265	-0.0006	-0.16	0.0269	-0.0056	-1.17
GAAY4A		0.0291	0.0020	0.56	0.0313	-0.0012	-0.25
GEZA6M		0.0284	0.0013	0.36	0.0348	0.0023	0.48
GG9P4R		0.0248	-0.0023	-0.64	0.0296	-0.0029	-0.62
GKD3GK		0.0275	0.0004	0.11	0.0321	-0.0004	-0.09
JEFKTJ		0.0256	-0.0015	-0.42	0.0314	-0.0011	-0.24
JLXWNC	X	0.2680	0.2409	67.09	0.3300	0.2975	62.49
JQP44Y		0.0298	0.0027	0.75	0.0347	0.0021	0.45
JZVUWP		0.0210	-0.0061	-1.69	0.0274	-0.0051	-1.07
KA2983		0.0286	0.0015	0.41	0.0333	0.0008	0.16
KPVFL4		0.0266	-0.0005	-0.14	0.0338	0.0013	0.27
KZW4FL		0.0317	0.0046	1.27	0.0410	0.0084	1.77
L88RFT		0.0301	0.0030	0.84	0.0334	0.0008	0.18
M6EBUW		0.0278	0.0007	0.20	0.0342	0.0017	0.35
N3LRAA		0.0270	-0.0001	-0.03	0.0362	0.0037	0.77
NCBDHF		0.0294	0.0023	0.64	0.0376	0.0051	1.06
NDG3CC		0.0318	0.0047	1.30	0.0405	0.0080	1.67
NQUXZN		0.0230	-0.0041	-1.14	0.0283	-0.0042	-0.89
PHWKPZ		0.0293	0.0022	0.62	0.0360	0.0035	0.73
PLV3PD		0.0325	0.0054	1.52	0.0404	0.0079	1.66
PN3LEN		0.0343	0.0072	2.01	0.0384	0.0058	1.22
PRY9XP		0.0336	0.0065	1.81	0.0424	0.0099	2.07
R6GLG3		0.0275	0.0004	0.10	0.0318	-0.0007	-0.15
RKXMC8		0.0330	0.0059	1.64	0.0368	0.0043	0.90
UJCLLB		0.0223	-0.0048	-1.33	0.0283	-0.0042	-0.88
UU8VQX	*	0.0275	0.0004	0.11	0.0256	-0.0069	-1.45
V4YGUN		0.0274	0.0003	0.08	0.0340	0.0015	0.31
VLV4XR		0.0217	-0.0054	-1.51	0.0259	-0.0067	-1.40
WMLUGC		0.0255	-0.0016	-0.46	0.0282	-0.0043	-0.90
WVHMRQ		0.0209	-0.0062	-1.74	0.0244	-0.0081	-1.71
WYE468	*	0.0159	-0.0112	-3.12	0.0201	-0.0125	-2.62



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1401

Total Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C87			Sample C88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
YEJ7U4		0.0245	-0.0026	-0.72	0.0311	-0.0015	-0.31
YJHDJ9		0.0262	-0.0009	-0.25	0.0335	0.0010	0.20
YVR474		0.0287	0.0016	0.44	0.0351	0.0026	0.55
YYP8L		0.0240	-0.0031	-0.86	0.0278	-0.0047	-0.99
ZEJJ2W		0.0265	-0.0006	-0.16	0.0370	0.0044	0.93
ZHCP98		0.0283	0.0012	0.33	0.0341	0.0016	0.34
ZHKPF3		0.0302	0.0031	0.85	0.0379	0.0054	1.13

Summary Statistics		Sample C87		Sample C88	
Grand Means		0.0271	inches	0.0325	inches
Stnd Dev Btwn Labs		0.0036	inches	0.0048	inches

Samples C87, C88 : Steel, Steel

Statistics based on 52 of 54 reporting participants

Comments on Assigned Data Flags for Test #1401

6B7CKZ (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample C87.

JLXWNC (X) - Data appear to be off by a factor of ten

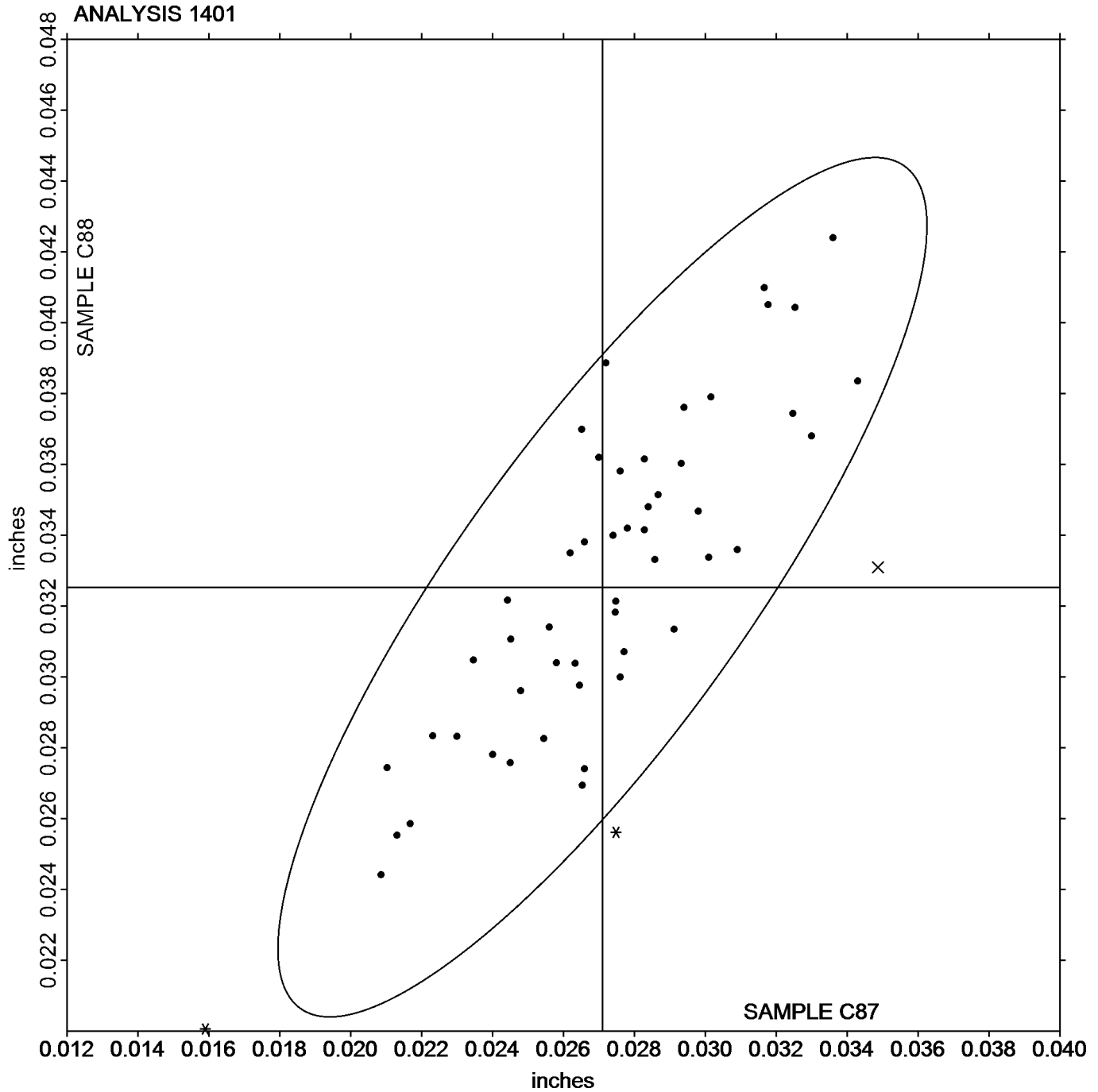


Analysis 1401

Total Case Depth
SAE J423, SAE J78

SAMPLE C87
0.0271 inches

SAMPLE C88
0.0325 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1402

Effective Case Depth
SAE J423, SAE J78

WebCode	Data Flag	Sample C87			Sample C88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
43B9XQ		0.0266	0.0004	0.30	0.0300	-0.0019	-0.99
4CF6V2		0.0278	0.0016	1.20	0.0326	0.0007	0.37
6B7CKZ		0.0288	0.0025	1.92	0.0318	-0.0001	-0.05
73PDAL		0.0250	-0.0013	-0.95	0.0348	0.0029	1.54
7Y2U8P		0.0277	0.0015	1.12	0.0340	0.0021	1.10
7YJWXX		0.0256	-0.0006	-0.47	0.0336	0.0017	0.91
87N3BT		0.0251	-0.0011	-0.83	0.0313	-0.0005	-0.29
8BDKN6		0.0254	-0.0009	-0.66	0.0326	0.0007	0.38
A939PT		0.0263	0.0001	0.06	0.0338	0.0019	1.00
CL2W4D		0.0269	0.0007	0.53	0.0337	0.0018	0.96
CXWZEY		0.0249	-0.0013	-1.01	0.0306	-0.0013	-0.70
D3ZG2E	X	0.000027	-0.0262	-19.80	0.000030	-0.0319	-16.83
DJNW4P		0.0252	-0.0010	-0.77	0.0295	-0.0024	-1.28
DY28RC		0.0256	-0.0006	-0.47	0.0312	-0.0007	-0.36
ERJ2V6	X	0.0134	-0.0128	-9.69	0.0166	-0.0153	-8.07
F6MYVY		0.0272	0.0009	0.71	0.0339	0.0021	1.09
F8BCZL		0.0273	0.0011	0.84	0.0309	-0.0010	-0.53
GAAY4A		0.0272	0.0010	0.77	0.0292	-0.0027	-1.41
GEZA6M		0.0266	0.0004	0.29	0.0330	0.0011	0.59
GG9P4R		0.0248	-0.0014	-1.07	0.0296	-0.0023	-1.21
GKD3GK		0.0282	0.0020	1.53	0.0323	0.0004	0.20
HJCTHZ		0.0266	0.0004	0.29	0.0306	-0.0013	-0.68
HL2YXQ		0.0270	0.0008	0.59	0.0316	-0.0003	-0.15
JLXWNC	X	0.2520	0.2258	170.66	0.3160	0.2841	150.11
JQP44Y		0.0277	0.0015	1.13	0.0327	0.0008	0.41
KA2983		0.0262	0.0000	0.01	0.0322	0.0003	0.18
KPVFL4		0.0248	-0.0014	-1.07	0.0304	-0.0015	-0.78
KZW4FL		0.0284	0.0022	1.65	0.0332	0.0013	0.70
L88RFT		0.0241	-0.0022	-1.64	0.0286	-0.0032	-1.72
LQMWEC	X	0.0326	0.0064	4.82	0.0352	0.0033	1.75
M6EBUW		0.0254	-0.0008	-0.62	0.0326	0.0007	0.38
N2VD77		0.0246	-0.0016	-1.23	0.0294	-0.0025	-1.31
N3LRAA		0.0240	-0.0022	-1.68	0.0322	0.0003	0.17
NCBDHF		0.0278	0.0016	1.19	0.0358	0.0039	2.07
NDG3CC		0.0271	0.0008	0.63	0.0319	0.0000	0.01
NDQQXQ		0.0240	-0.0022	-1.68	0.0280	-0.0039	-2.05
NL24ZF		0.0261	-0.0001	-0.08	0.0321	0.0002	0.10
NQUXZN		0.0259	-0.0003	-0.26	0.0326	0.0008	0.40
NZZZCL		0.0251	-0.0012	-0.88	0.0310	-0.0009	-0.49
PCLQAV		0.0278	0.0016	1.18	0.0318	-0.0001	-0.03
PHWKPZ		0.0264	0.0002	0.13	0.0342	0.0023	1.22
PLV3PD	*	0.0229	-0.0033	-2.48	0.0267	-0.0052	-2.76
PN3LEN		0.0263	0.0000	0.03	0.0315	-0.0004	-0.20
PRY9XP		0.0258	-0.0004	-0.32	0.0336	0.0017	0.91
Q3G4ZA		0.0261	-0.0002	-0.12	0.0332	0.0013	0.69
RKXMC8		0.0245	-0.0018	-1.33	0.0292	-0.0027	-1.42
RQ2B69		0.0267	0.0005	0.34	0.0321	0.0002	0.09



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1402 Effective Case Depth SAE J423, SAE J78

WebCode	Data Flag	Sample C87			Sample C88		
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV
TBNE8R		0.0269	0.0006	0.48	0.0312	-0.0007	-0.37
UCWWXA	X	0.0302	0.0039	2.98	0.0409	0.0090	4.75
UU8VQX	X	0.0344	0.0082	6.19	0.0320	0.0001	0.07
V4YGUN		0.0252	-0.0010	-0.77	0.0304	-0.0015	-0.78
VGZGZX		0.0272	0.0010	0.77	0.0327	0.0008	0.42
VLV4XR		0.0264	0.0001	0.11	0.0317	-0.0002	-0.12
WMLUGC		0.0260	-0.0002	-0.16	0.0296	-0.0023	-1.23
WVHMRQ		0.0272	0.0009	0.71	0.0355	0.0036	1.92
WYE468	X	0.0180	-0.0082	-6.21	0.0210	-0.0109	-5.75
YEJ7U4		0.0270	0.0008	0.62	0.0300	-0.0019	-0.99
YJHDJ9		0.0268	0.0005	0.41	0.0335	0.0016	0.83
YVR474		0.0264	0.0001	0.11	0.0334	0.0015	0.81
ZEJJ2W	*	0.0238	-0.0024	-1.83	0.0332	0.0013	0.70
ZHCP98		0.0280	0.0018	1.34	0.0342	0.0023	1.22
ZHKPF3		0.0281	0.0019	1.42	0.0329	0.0011	0.56

Summary Statistics

	Sample C87		Sample C88	
Grand Means	0.0262	inches	0.0319	inches
Std Dev Btwn Labs	0.0013	inches	0.0019	inches

Samples C87, C88 : Steel, Steel

Statistics based on 55 of 62 reporting participants

Comments on Assigned Data Flags for Test #1402

D3ZG2E (X) - Data for both samples are low.

ERJ2V6 (X) - Data for both samples are low.

JLXWNC (X) - Data appear to be off by a factor of ten

LQMWEC (X) - Data for sample C87 are high.

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

UU8VQX (X) - Data for sample C87 are high.

WYE468 (X) - Data for both samples are low. Inconsistent within the determinations of sample C88.

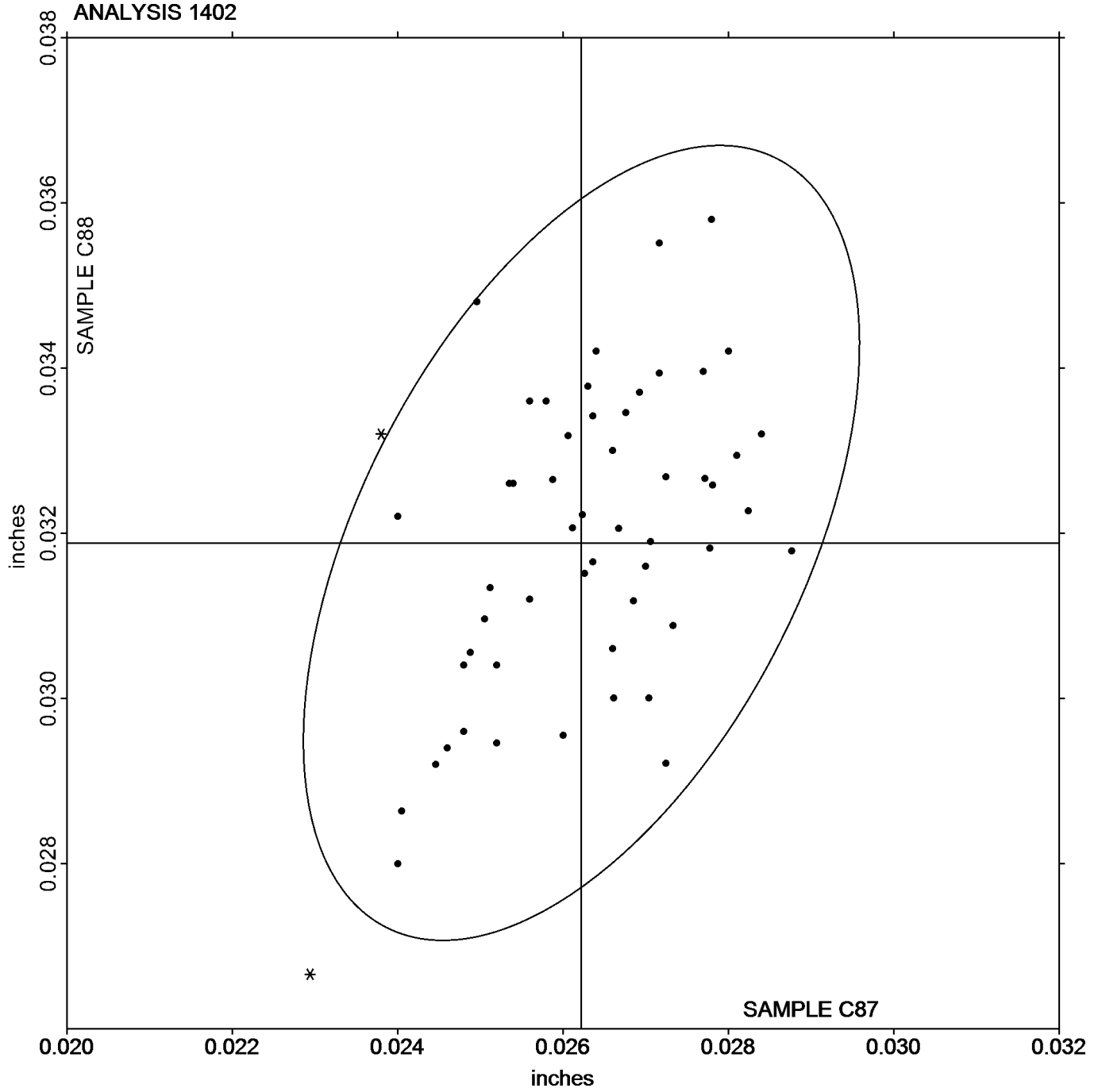


Analysis 1402

Effective Case Depth
SAE J423, SAE J78

SAMPLE C87
0.0262 inches

SAMPLE C88
0.0319 inches





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1412

Grain Size (Inconel)
ASTM E112, ASTM E1382

WebCode	Data Flag	Sample J87			Sample J88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2V6J8M		8.30	-0.04	-0.06	7.10	0.29	0.41	Comparison Method
33GXR4		9.40	1.06	1.75	7.20	0.39	0.55	N/A
34BWN4		8.80	0.46	0.76	7.40	0.59	0.83	N/A
37G48W		8.54	0.20	0.33	7.22	0.41	0.58	General Intercept
3YGR9R		9.20	0.86	1.42	6.50	-0.31	-0.43	Comparison Method
3ZD6TY		8.20	-0.14	-0.23	6.00	-0.81	-1.14	N/A
7HX6B6		9.40	1.06	1.75	6.80	-0.01	-0.01	N/A
87N3BT		8.00	-0.34	-0.56	7.00	0.19	0.27	Comparison Method
CXWZEY		8.00	-0.34	-0.56	6.30	-0.51	-0.72	Comparison Method
D8YT47		7.86	-0.48	-0.78	7.95	1.14	1.60	Automatic Image Analysis
D97CKE		8.21	-0.12	-0.20	6.04	-0.77	-1.08	Heyn Linear Intercept
DDJ37M		8.60	0.26	0.43	7.70	0.89	1.25	N/A
DKJ6G2		8.80	0.46	0.76	6.80	-0.01	-0.01	Comparison Method
DVLF2J		7.70	-0.64	-1.05	6.20	-0.61	-0.86	Comparison Method
EGX6C7		8.80	0.46	0.76	8.06	1.25	1.76	Heyn Linear Intercept
FXYEMP		7.80	-0.54	-0.89	6.20	-0.61	-0.86	Comparison Method
FZ6QMP		7.40	-0.94	-1.54	6.20	-0.61	-0.86	Comparison Method
GFXLLN		9.00	0.66	1.09	7.00	0.19	0.27	Comparison Method
HJCTHZ		7.30	-1.04	-1.71	5.50	-1.31	-1.84	Comparison Method
HZCTAM		7.85	-0.48	-0.80	7.25	0.44	0.63	Automatic Image Analysis
JLXWNC		8.40	0.06	0.10	6.60	-0.21	-0.29	N/A
JTXCDJ		8.70	0.36	0.60	7.50	0.69	0.97	Comparison Method
JZVUWP	*	8.76	0.42	0.70	5.48	-1.33	-1.87	N/A
KJ7ZWW		9.00	0.66	1.09	7.60	0.79	1.11	N/A
KRU7AG		8.33	-0.01	-0.01	7.18	0.37	0.52	N/A
KVZ82T		8.40	0.06	0.10	6.40	-0.41	-0.57	Comparison Method
M789QW		9.60	1.26	2.08	7.10	0.29	0.41	Comparison Method
MGRF2R		9.06	0.72	1.19	7.24	0.43	0.61	Abrams Three-Circle
NCD3MD		7.77	-0.57	-0.94	6.63	-0.18	-0.26	N/A
NL24ZF		8.50	0.16	0.27	6.80	-0.01	-0.01	N/A
NTE7WF		7.80	-0.54	-0.89	5.80	-1.01	-1.42	Comparison Method
PLV3PD		7.80	-0.54	-0.89	6.90	0.09	0.13	N/A
PPCDM6		8.12	-0.22	-0.36	7.00	0.19	0.27	Automatic Image Analysis
PZETDA		8.40	0.06	0.10	6.20	-0.61	-0.86	Comparison Method
QKX8JF		8.90	0.56	0.93	7.70	0.89	1.25	N/A
QU4Y3J		7.60	-0.74	-1.21	5.60	-1.21	-1.70	N/A
QX7QHB		8.20	-0.14	-0.23	6.00	-0.81	-1.14	N/A
TW3AT3		7.00	-1.34	-2.20	6.60	-0.21	-0.29	Comparison Method
TWYKP7		8.46	0.12	0.20	7.62	0.81	1.14	Abrams Three-Circle
VKYTZ4		8.80	0.46	0.76	8.00	1.19	1.67	N/A
VWEKMR		8.01	-0.33	-0.55	6.76	-0.05	-0.07	N/A
YJHDJ9	X	9.55	1.22	2.00	9.52	2.71	3.81	N/A
YVDM6V		7.20	-1.14	-1.87	5.80	-1.01	-1.42	N/A
ZEJJ2W	X	6.20	-2.14	-3.52	8.30	1.49	2.10	Comparison Method
ZLJ2C3		8.68	0.34	0.56	8.08	1.27	1.78	N/A
ZMCWU6		8.20	-0.14	-0.23	6.60	-0.21	-0.29	N/A



Analysis 1412

Grain Size (Inconel)
ASTM E112, ASTM E1382

Summary Statistics

Table with 4 columns: Metric, Sample J87, Sample J88. Rows include Grand Means and Std Dev Btwn Labs for ASTM Grain Size.

Samples J87, J88 : Inco 718, Inco 718

Statistics based on 44 of 46 reporting participants

Comments on Assigned Data Flags for Test #1412

YJHDJ9 (X) - Data for sample J88 are high.

ZEJJ2W (X) - Data for sample J87 are low.



Analysis 1412

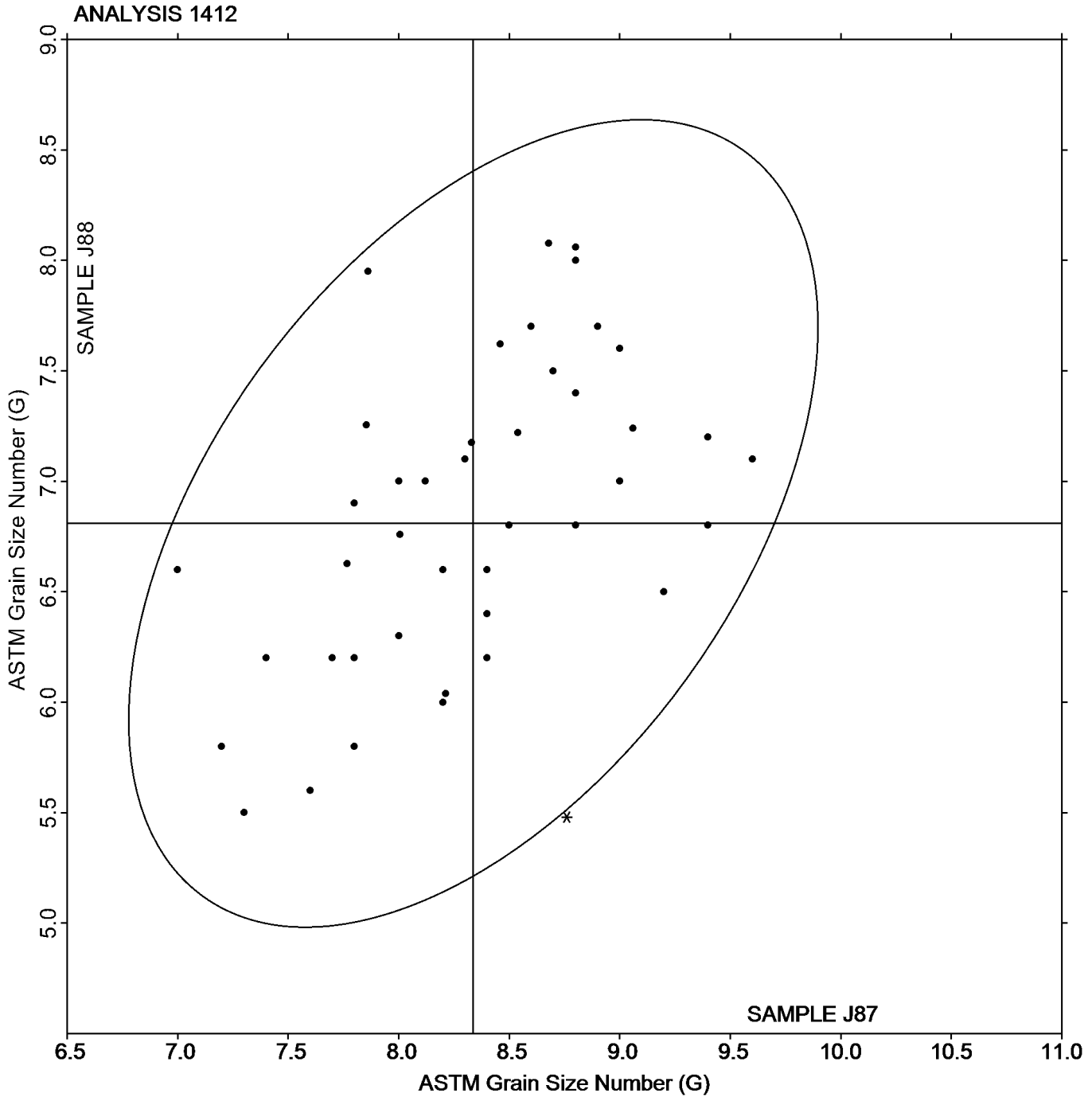
Grain Size (Inconel)
ASTM E112, ASTM E1382

SAMPLE J87

SAMPLE J88

8.338 ASTM Grain Size Number (G)

6.809 ASTM Grain Size Number (G)





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1640

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z		0.0473	-0.0048	-1.79	0.0173	-0.0008	-0.32	OE
2FRYUB		0.0520	-0.0002	-0.06	0.0167	-0.0015	-0.58	XX
2UQ8G6		0.0493	-0.0028	-1.05	0.0143	-0.0038	-1.46	CO
3LW69R		0.0543	0.0022	0.80	0.0237	0.0055	2.09	OE
43B9XQ		0.0516	-0.0006	-0.22	0.0205	0.0024	0.90	OE
4XJQQT		0.0510	-0.0012	-0.43	0.0157	-0.0025	-0.96	CI
6KUJ4P		0.0540	0.0018	0.68	0.0191	0.0009	0.35	OE
6NCJJ6		0.0523	0.0002	0.06	0.0225	0.0044	1.66	OE
7N94TD		0.0503	-0.0019	-0.69	0.0160	-0.0021	-0.82	CI
7XBPN4		0.0479	-0.0042	-1.57	0.0161	-0.0020	-0.78	OE
87N3BT		0.0540	0.0018	0.68	0.0223	0.0042	1.58	GD
9ADZWP		0.0573	0.0051	1.88	0.0192	0.0011	0.40	OE
BRMP7R	X	0.0377	-0.0145	-5.37	0.0140	-0.0042	-1.59	OE
CXWZAT		0.0538	0.0016	0.60	0.0178	-0.0003	-0.13	CI
CXWZEY		0.0530	0.0008	0.31	0.0167	-0.0015	-0.56	CO
D8YT47		0.0567	0.0046	1.69	0.0246	0.0064	2.44	CO
F7YETW		0.0486	-0.0035	-1.31	0.0231	0.0049	1.87	OE
F8BCZL		0.0516	-0.0005	-0.20	0.0155	-0.0027	-1.02	CI
FFMCDA	X	0.0605	0.0083	3.07	0.0164	-0.0018	-0.68	OE
GUT9NA		0.0497	-0.0025	-0.93	0.0220	0.0038	1.45	OE
HLDP4B	X	0.0630	0.0108	4.01	0.00700	-0.0112	-4.25	OE
HZHVDL		0.0501	-0.0021	-0.77	0.0180	-0.0002	-0.08	CI
K9296G		0.0538	0.0016	0.60	0.0178	-0.0003	-0.13	CI
KKHTTK		0.0471	-0.0051	-1.88	0.0131	-0.0051	-1.93	GD
KKW6GH		0.0522	0.0000	0.00	0.0187	0.0005	0.19	OE
KPVFL4		0.0513	-0.0008	-0.31	0.0230	0.0048	1.82	OE
KVZ82T		0.0547	0.0025	0.92	0.0170	-0.0011	-0.44	OE
MHPJYA		0.0506	-0.0016	-0.59	0.0181	-0.0001	-0.04	GD
PHWKPZ	X	0.0553	0.0032	1.17	0.0280	0.0098	3.74	OE
PK8FHJ		0.0540	0.0018	0.68	0.0210	0.0028	1.07	CO
QEWNNC		0.0534	0.0012	0.45	0.0187	0.0005	0.20	OE
QMTJPG		0.0467	-0.0055	-2.04	0.0147	-0.0035	-1.34	OE
R6GLG3		0.0510	-0.0012	-0.43	0.0174	-0.0008	-0.31	CI
RB9LZQ		0.0540	0.0018	0.68	0.0180	-0.0002	-0.07	GD
RCNXX9	X	0.0440	-0.0082	-3.02	0.0227	0.0045	1.71	OE
RFH7RG	X	0.0650	0.0128	4.75	0.0212	0.0030	1.14	OE
RJ4YTC		0.0520	-0.0002	-0.06	0.0173	-0.0008	-0.32	OE
RN8WZH		0.0513	-0.0008	-0.31	0.0187	0.0006	0.21	OE
RWCCEJ		0.0508	-0.0014	-0.52	0.0181	-0.0001	-0.03	OE
T4L9NH		0.0523	0.0002	0.06	0.0170	-0.0012	-0.45	CI
TWYKP7		0.0508	-0.0014	-0.52	0.0164	-0.0017	-0.66	CO
UCWWXA		0.0508	-0.0014	-0.52	0.0146	-0.0035	-1.35	OE
UEGVZX		0.0540	0.0018	0.68	0.0200	0.0018	0.69	OE
UFDAQB		0.0517	-0.0005	-0.19	0.0153	-0.0029	-1.10	OE
UJ2LR2	X	0.0733	0.0212	7.83	0.0200	0.0018	0.69	OE
V9AUCM		0.0571	0.0049	1.82	0.0199	0.0017	0.64	CI
VKJJ2B		0.0553	0.0031	1.16	0.0181	-0.0001	-0.04	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1640

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WDHETR		0.0527	0.0005	0.18	0.0170	-0.0012	-0.45	OE
WJMBJJ		0.0528	0.0006	0.22	0.0192	0.0010	0.38	OE
WMLUGC		0.0537	0.0015	0.55	0.0167	-0.0015	-0.58	OE
WNXBR4		0.0535	0.0014	0.50	0.0175	-0.0007	-0.26	OE
WTVWQ9		0.0482	-0.0040	-1.49	0.0150	-0.0032	-1.21	OE
WVZFQF		0.0562	0.0041	1.50	0.0215	0.0033	1.26	OE
WX4B6C		0.0521	-0.0001	-0.04	0.0152	-0.0030	-1.15	CI
WXZT38		0.0493	-0.0029	-1.06	0.0176	-0.0005	-0.21	OE
XXJT7W		0.0519	-0.0003	-0.11	0.0153	-0.0028	-1.08	CI
Y2YP77		0.0513	-0.0008	-0.31	0.0170	-0.0012	-0.46	CO
Y43KHA	X	0.0417	-0.0105	-3.89	0.0167	-0.0015	-0.58	OE
YEJ7U4	*	0.0602	0.0080	2.96	0.0207	0.0025	0.96	CO
YRBQE2		0.0515	-0.0006	-0.24	0.0186	0.0004	0.16	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	0.0522	Percent	0.0182	Percent
Std Dev Btwn Labs	0.0027	Percent	0.0026	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 52 of 60 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1640

- BRMP7R (X) - Data for sample M87 are low.
- FFMCDA (X) - Data for sample M87 are high.
- HLDP4B (X) - Data for sample M87 are high and data for sample M88 are low.
- PHWKPZ (X) - Data for sample M88 are high.
- RCNXX9 (X) - Data for sample M87 are low.
- RFH7RG (X) - Data for sample M87 are high.
- UJ2LR2 (X) - Data for sample M87 are high. Inconsistent within the determinations of sample M87.
- Y43KHA (X) - Data for sample M87 are low. Inconsistent within the determinations of both samples.

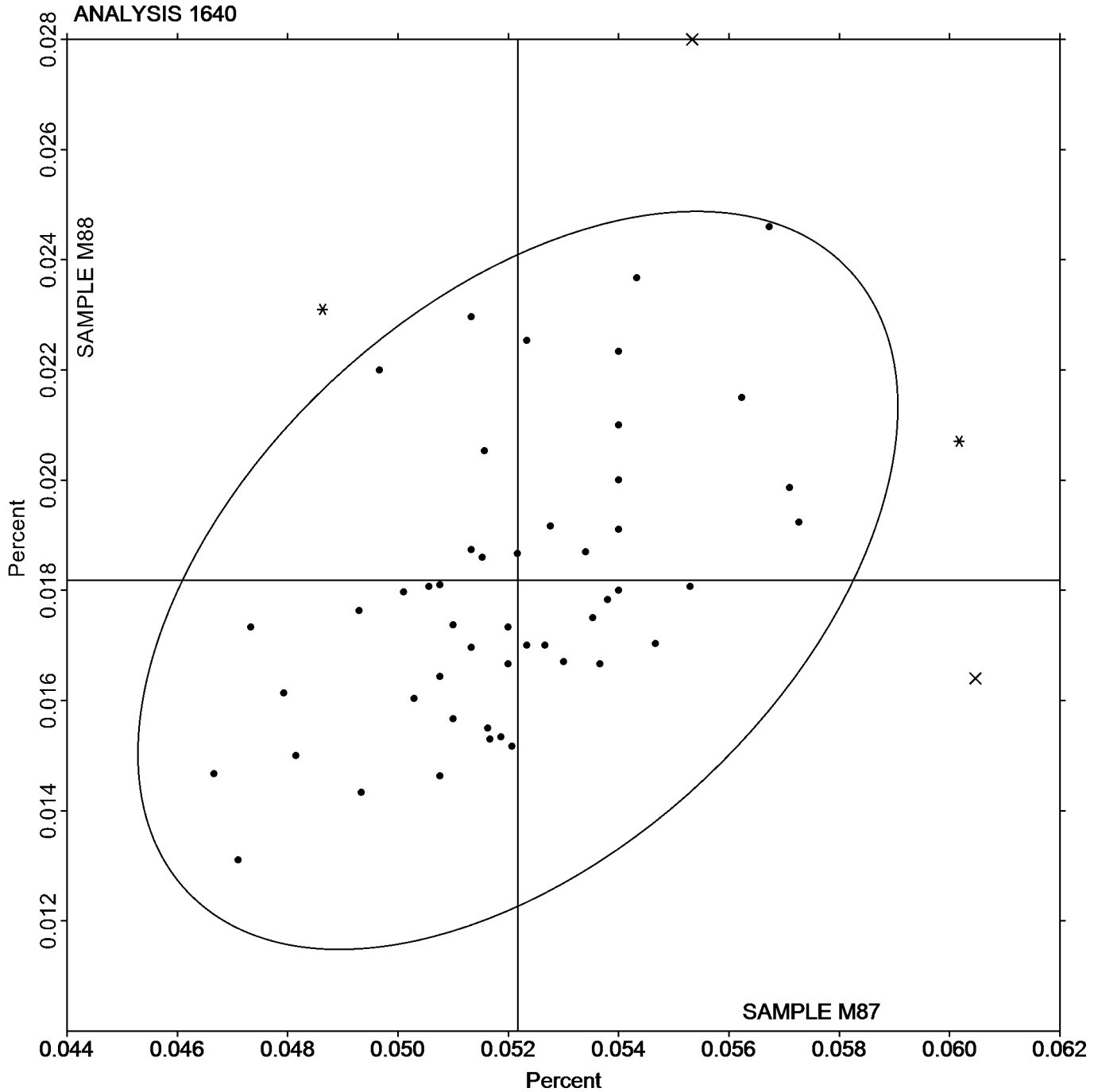


Analysis 1640

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

SAMPLE M87
0.0522 Percent

SAMPLE M88
0.0182 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1641

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z	*	1.874	0.037	1.93	1.936	-0.007	-0.36	OE
2FRYUB		1.821	-0.016	-0.82	1.924	-0.019	-0.99	IC
2UQ8G6		1.833	-0.004	-0.21	1.940	-0.002	-0.13	OE
3LW69R		1.860	0.023	1.20	1.947	0.004	0.21	OE
43B9XQ		1.853	0.017	0.86	1.970	0.027	1.44	OE
4XJQQT		1.843	0.007	0.34	1.926	-0.017	-0.91	IC
6KUJ4P		1.838	0.001	0.06	1.914	-0.029	-1.52	OE
6NCJJ6		1.825	-0.011	-0.59	1.955	0.012	0.65	OE
7N94TD		1.847	0.010	0.52	1.950	0.007	0.36	WD
7XBPN4		1.850	0.014	0.70	1.956	0.013	0.70	OE
87N3BT	X	1.803	-0.033	-1.73	1.400	-0.543	-28.73	GD
99JCDT		1.817	-0.020	-1.04	1.920	-0.023	-1.21	IC
9ADZWP		1.838	0.001	0.05	1.949	0.006	0.33	OE
BRMP7R	X	1.857	0.020	1.03	2.043	0.101	5.32	OE
CXWZAT		1.831	-0.006	-0.32	1.934	-0.008	-0.45	XR
CXWZEY		1.846	0.009	0.48	1.954	0.011	0.59	OE
D8YT47		1.823	-0.013	-0.70	1.910	-0.033	-1.73	OE
F7YETW	X	1.913	0.077	3.96	2.030	0.087	4.62	OE
F8BCZL		1.847	0.010	0.53	1.948	0.005	0.26	IC
FFMCDA	X	1.720	-0.117	-6.05	1.737	-0.206	-10.91	OE
GUT9NA	X	1.851	0.015	0.75	2.016	0.073	3.87	OE
HEYV4K		1.833	-0.004	-0.20	1.934	-0.009	-0.46	WD
HLDP4B		1.820	-0.017	-0.87	1.930	-0.013	-0.68	OE
HZHVDL		1.824	-0.013	-0.68	1.926	-0.017	-0.89	WD
K9296G		1.855	0.019	0.96	1.962	0.020	1.03	XR
KKHTTK		1.808	-0.029	-1.49	1.924	-0.019	-0.99	GD
KKW6GH		1.823	-0.013	-0.70	1.947	0.004	0.21	OE
KPVFL4		1.823	-0.013	-0.70	1.953	0.011	0.56	OE
KVZ82T		1.857	0.020	1.03	1.956	0.013	0.68	OE
MHPJYA		1.880	0.043	2.24	1.973	0.031	1.62	GD
PHWKPZ		1.811	-0.026	-1.35	1.933	-0.010	-0.52	OE
PK8FHJ		1.857	0.020	1.03	1.973	0.031	1.62	IC
QEWNNC		1.823	-0.013	-0.70	1.917	-0.026	-1.38	OE
QMTJPG		1.820	-0.017	-0.89	1.975	0.032	1.69	OE
R6GLG3	*	1.879	0.042	2.19	1.946	0.004	0.19	IC
RB9LZQ		1.860	0.023	1.20	1.970	0.027	1.44	GD
RCNXX9		1.823	-0.013	-0.70	1.943	0.001	0.03	OE
RFH7RG		1.872	0.035	1.82	1.984	0.041	2.16	OE
RJ4YTC		1.803	-0.033	-1.73	1.917	-0.026	-1.38	OE
RN8WZH		1.858	0.021	1.10	1.961	0.018	0.96	OE
RWCCEJ		1.833	-0.003	-0.18	1.937	-0.006	-0.32	OE
T4L9NH		1.850	0.013	0.68	1.970	0.027	1.44	XR
UCWWXA		1.830	-0.007	-0.35	1.940	-0.003	-0.15	OE
UEGVZX	X	1.830	-0.007	-0.35	2.013	0.071	3.73	OE
UFDAQB	X	1.897	0.060	3.10	2.010	0.067	3.56	OE
UJ2LR2	X	1.700	-0.137	-7.09	1.783	-0.159	-8.44	OE
V9AUCM		1.817	-0.019	-1.01	1.937	-0.006	-0.31	IC



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1641

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VKJJ2B		1.850	0.013	0.69	1.952	0.009	0.47	OE
WDHETR		1.810	-0.027	-1.39	1.919	-0.024	-1.28	WD
WJMJJ		1.831	-0.006	-0.30	1.938	-0.005	-0.25	WD
WMLUGC		1.821	-0.016	-0.82	1.930	-0.013	-0.68	OE
WNXBR4		1.850	0.013	0.68	1.970	0.027	1.44	OE
WTVWQ9		1.838	0.002	0.08	1.944	0.001	0.05	WD
WVZFQF	X	1.807	-0.030	-1.55	1.858	-0.085	-4.47	OE
WX4B6C		1.837	0.001	0.03	1.935	-0.008	-0.41	WD
WXZT38	X	1.827	-0.010	-0.53	2.060	0.117	6.20	OE
XXJT7W		1.834	-0.003	-0.16	1.931	-0.012	-0.64	WD
Y2YP77		1.834	-0.003	-0.16	1.944	0.001	0.06	IC
Y43KHA	X	1.728	-0.109	-5.64	1.845	-0.098	-5.19	OE
YEJ7U4		1.800	-0.037	-1.90	1.902	-0.041	-2.16	OE
YRBQE2		1.829	-0.008	-0.43	1.935	-0.007	-0.39	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	1.837	Percent	1.943	Percent
Std Dev Btwn Labs	0.019	Percent	0.019	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 50 of 61 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1641

- 87N3BT (X) - Data for sample M88 are low.
- BRMP7R (X) - Data for sample M88 are high.
- F7YETW (X) - Data for both samples are high.
- FFMCDA (X) - Data for both samples are low.
- GUT9NA (X) - Data for sample M88 are high.
- UEGVZX (X) - Data for sample M88 are high.
- UFDAQB (X) - Data for both samples are high.
- UJ2LR2 (X) - Data for both samples are low.
- WVZFQF (X) - Data for sample M88 are low.
- WXZT38 (X) - Data for sample M88 are high.
- Y43KHA (X) - Data for both samples are low.



Fasteners and Metals Interlaboratory Testing Program

Cycle 140

Analysis 1641

4th Qtr 2022

Corrosion Resistant Steel, MANGANESE (Mn)

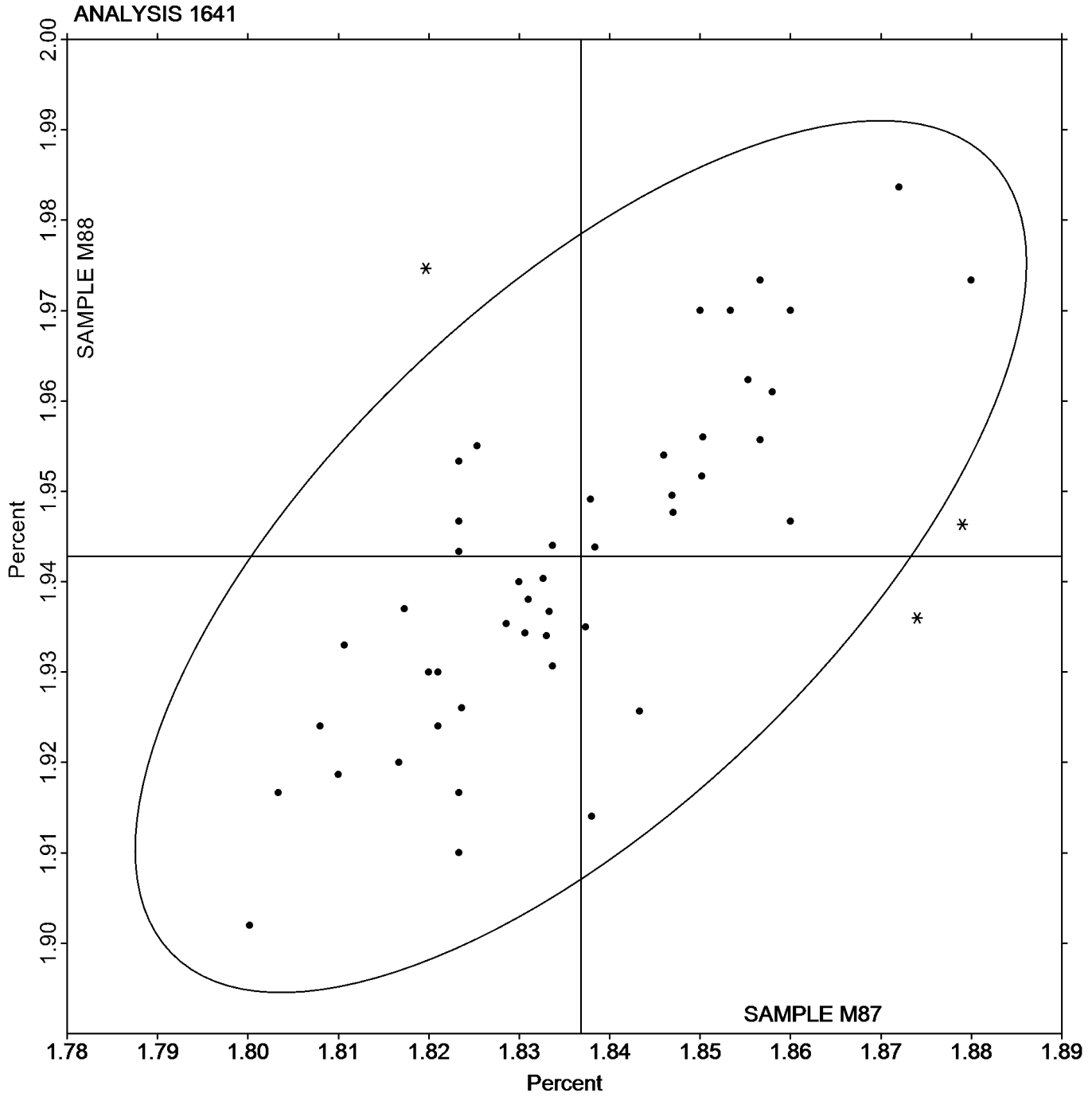
MANGANESE (Mn)

SAMPLE M87

SAMPLE M88

1.837 Percent

1.943 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1642

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z		0.0357	0.0012	0.44	0.0317	0.0024	1.13	OE
2FRYUB		0.0360	0.0015	0.56	0.0303	0.0011	0.51	IC
2UQ8G6		0.0360	0.0015	0.56	0.0300	0.0008	0.35	OE
3LW69R		0.0360	0.0015	0.56	0.0300	0.0008	0.35	OE
43B9XQ		0.0355	0.0011	0.39	0.0304	0.0012	0.54	OE
4XJQQT		0.0390	0.0045	1.67	0.0296	0.0004	0.17	IC
6KUJ4P		0.0352	0.0007	0.27	0.0288	-0.0004	-0.20	OE
6NCJJ6		0.0346	0.0002	0.06	0.0283	-0.0010	-0.45	OE
7N94TD		0.0356	0.0011	0.40	0.0300	0.0007	0.34	WD
7XBPN4	*	0.0414	0.0069	2.55	0.0358	0.0066	3.04	OE
87N3BT		0.0327	-0.0018	-0.67	0.0283	-0.0009	-0.42	GD
99JCDT		0.0330	-0.0015	-0.54	0.0280	-0.0012	-0.57	IC
9ADZWP		0.0377	0.0033	1.20	0.0319	0.0027	1.25	OE
BRMP7R	*	0.0270	-0.0075	-2.75	0.0237	-0.0056	-2.58	OE
CXWZAT		0.0375	0.0030	1.10	0.0314	0.0021	0.99	XR
CXWZEY		0.0321	-0.0024	-0.88	0.0270	-0.0022	-1.03	OE
D8YT47		0.0317	-0.0028	-1.04	0.0300	0.0008	0.35	OE
F7YETW		0.0369	0.0024	0.89	0.0309	0.0017	0.79	OE
F8BCZL	X	0.0404	0.0059	2.18	0.0293	0.0001	0.05	IC
FFMCDA		0.0310	-0.0035	-1.28	0.0250	-0.0042	-1.96	OE
GUT9NA		0.0290	-0.0055	-2.02	0.0267	-0.0026	-1.19	OE
HEYV4K		0.0343	-0.0001	-0.05	0.0290	-0.0002	-0.11	WD
HLDP4B		0.0320	-0.0025	-0.91	0.0270	-0.0022	-1.03	OE
HZHVDL		0.0320	-0.0025	-0.91	0.0270	-0.0022	-1.03	WD
K9296G		0.0361	0.0017	0.61	0.0303	0.0011	0.49	XR
KKHTTK		0.0335	-0.0010	-0.36	0.0318	0.0026	1.19	XX
KKW6GH		0.0364	0.0019	0.71	0.0315	0.0023	1.06	OE
KPVFL4		0.0342	-0.0002	-0.09	0.0297	0.0005	0.23	OE
KVZ82T		0.0380	0.0035	1.30	0.0309	0.0017	0.79	OE
MHPJYA		0.0335	-0.0010	-0.36	0.0297	0.0004	0.20	GD
PHWKPZ		0.0320	-0.0025	-0.91	0.0287	-0.0006	-0.26	OE
PK8FHJ	X	0.0270	-0.0075	-2.75	0.0280	-0.0012	-0.57	IC
QEWNNC		0.0384	0.0039	1.44	0.0298	0.0005	0.25	OE
QMTJPG	*	0.0402	0.0058	2.12	0.0280	-0.0012	-0.57	OE
R6GLG3		0.0372	0.0028	1.01	0.0304	0.0011	0.52	IC
RB9LZQ		0.0280	-0.0065	-2.39	0.0240	-0.0052	-2.42	GD
RCNXX9		0.0300	-0.0045	-1.65	0.0263	-0.0029	-1.34	OE
RFH7RG		0.0369	0.0024	0.89	0.0324	0.0032	1.46	OE
RJ4YTC		0.0360	0.0015	0.56	0.0317	0.0024	1.13	OE
RN8WZH		0.0359	0.0014	0.51	0.0308	0.0016	0.72	OE
RWCCEJ		0.0355	0.0010	0.38	0.0288	-0.0005	-0.22	OE
T4L9NH		0.0340	-0.0005	-0.18	0.0290	-0.0002	-0.11	XR
UCWWXA		0.0307	-0.0038	-1.40	0.0254	-0.0039	-1.79	OE
UEGVZX		0.0350	0.0005	0.19	0.0293	0.0001	0.05	OE
UFDAQB		0.0351	0.0007	0.24	0.0295	0.0003	0.12	OE
UJ2LR2	*	0.0320	-0.0025	-0.91	0.0313	0.0021	0.97	OE
V9AUCM		0.0340	-0.0005	-0.18	0.0293	0.0001	0.05	IC



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1642

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VKJJ2B		0.0347	0.0002	0.07	0.0289	-0.0003	-0.15	OE
WDHETR		0.0310	-0.0035	-1.28	0.0260	-0.0032	-1.50	WD
WJMBJJ		0.0347	0.0002	0.07	0.0292	0.0000	0.00	WD
WMLUGC		0.0348	0.0004	0.13	0.0298	0.0006	0.26	OE
WNXBR4		0.0342	-0.0003	-0.10	0.0284	-0.0008	-0.37	OE
WTVWQ9		0.0350	0.0005	0.19	0.0292	0.0000	-0.02	WD
WVZFQF		0.0357	0.0013	0.46	0.0304	0.0011	0.52	OE
WX4B6C		0.0352	0.0007	0.25	0.0297	0.0005	0.23	WD
WXZT38		0.0350	0.0005	0.19	0.0307	0.0015	0.68	OE
XXJT7W		0.0356	0.0011	0.41	0.0299	0.0007	0.31	WD
Y2YP77		0.0374	0.0029	1.08	0.0306	0.0014	0.63	IC
Y43KHA		0.0322	-0.0023	-0.85	0.0268	-0.0024	-1.11	OE
YRBQE2		0.0330	-0.0015	-0.54	0.0274	-0.0018	-0.83	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	0.0345	Percent	0.0292	Percent
Std Dev Btwn Labs	0.0027	Percent	0.0022	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 56 of 60 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1642

F8BCZL (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample M87.

PK8FHJ (X) - Data for sample M87 are low.

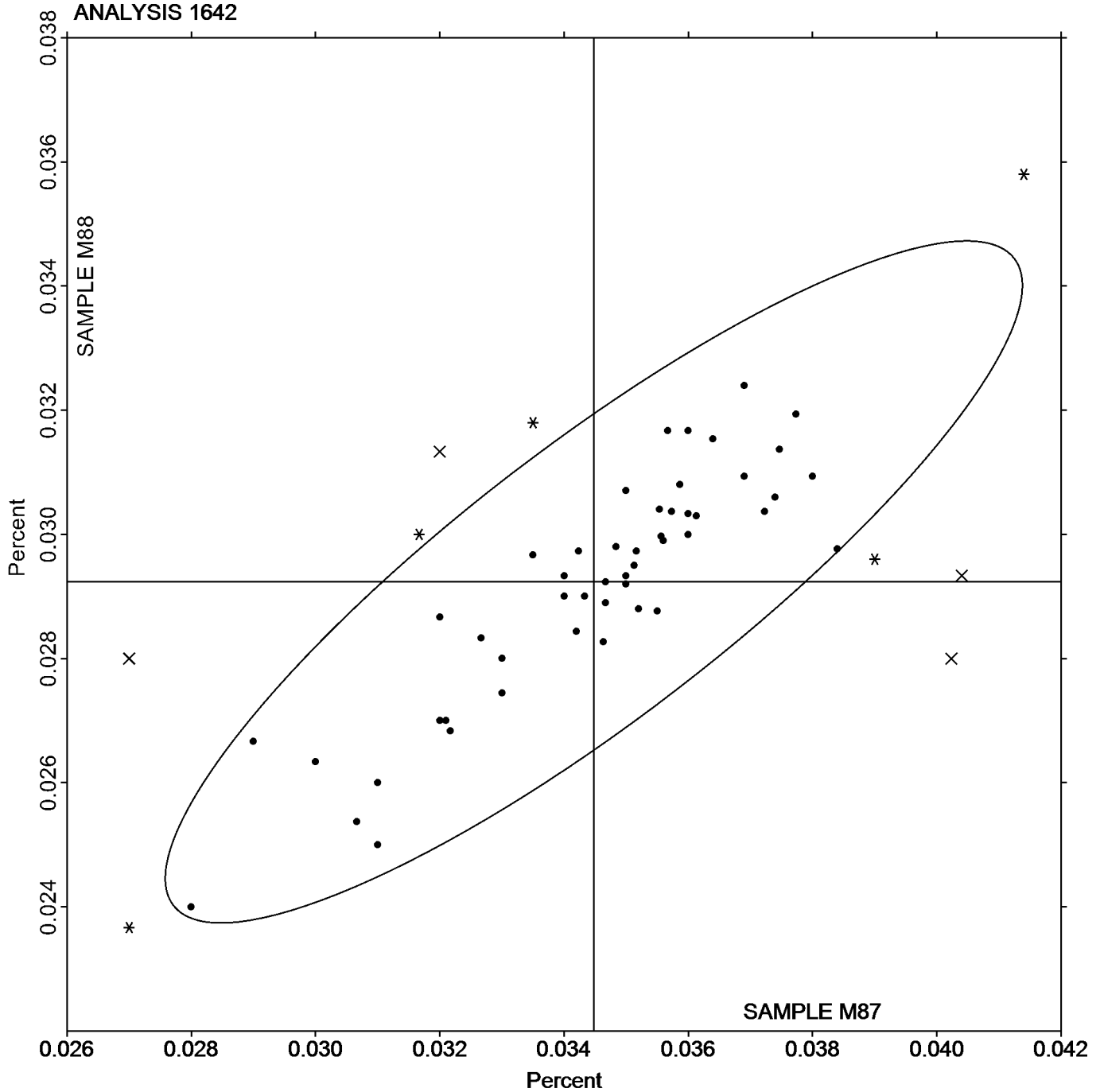


Analysis 1642

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

SAMPLE M87
0.0345 Percent

SAMPLE M88
0.0292 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1643

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z		0.0280	0.0017	1.04	0.0280	0.0035	2.42	XX
2FRYUB		0.0267	0.0003	0.21	0.0250	0.0005	0.34	CI
2UQ8G6		0.0283	0.0020	1.23	0.0258	0.0013	0.90	CO
3LW69R		0.0263	0.0000	0.01	0.0240	-0.0005	-0.35	OE
43B9XQ		0.0258	-0.0005	-0.30	0.0228	-0.0017	-1.18	OE
4XJQQT		0.0266	0.0002	0.15	0.0245	0.0000	0.02	CI
6KUJ4P		0.0270	0.0007	0.42	0.0244	-0.0001	-0.07	OE
6NCJJ6		0.0256	-0.0007	-0.43	0.0233	-0.0012	-0.86	OE
7N94TD		0.0259	-0.0004	-0.26	0.0249	0.0004	0.28	CI
7XBPN4		0.0269	0.0006	0.38	0.0236	-0.0009	-0.60	OE
87N3BT		0.0277	0.0013	0.83	0.0250	0.0005	0.34	GD
9ADZWP		0.0270	0.0007	0.42	0.0244	-0.0001	-0.05	OE
BRMP7R		0.0243	-0.0020	-1.23	0.0237	-0.0008	-0.58	OE
CXWZAT		0.0250	-0.0014	-0.84	0.0233	-0.0012	-0.83	CI
CXWZEY		0.0262	-0.0001	-0.07	0.0254	0.0009	0.62	CO
D8YT47		0.0265	0.0002	0.13	0.0251	0.0006	0.39	CO
F7YETW	X	0.0322	0.0059	3.66	0.0288	0.0043	2.95	OE
F8BCZL		0.0271	0.0007	0.46	0.0248	0.0003	0.20	CI
FFMCDA		0.0263	0.0000	0.01	0.0225	-0.0020	-1.36	OE
GUT9NA	X	0.0203	-0.0060	-3.71	0.0167	-0.0078	-5.42	OE
HLDP4B		0.0290	0.0027	1.66	0.0260	0.0015	1.03	OE
HZHVDL		0.0255	-0.0009	-0.53	0.0236	-0.0009	-0.60	CI
K9296G		0.0250	-0.0014	-0.84	0.0233	-0.0012	-0.83	CI
KKHTTK		0.0240	-0.0023	-1.44	0.0240	-0.0005	-0.35	GD
KKW6GH		0.0264	0.0000	0.03	0.0262	0.0017	1.20	OE
KPVFL4		0.0249	-0.0014	-0.86	0.0237	-0.0008	-0.56	OE
KVZ82T		0.0297	0.0034	2.09	0.0270	0.0025	1.70	OE
MHPJYA		0.0244	-0.0019	-1.19	0.0224	-0.0021	-1.48	GD
PHWKPZ		0.0257	-0.0007	-0.40	0.0253	0.0008	0.57	OE
PK8FHJ	X	0.0330	0.0067	4.13	0.0310	0.0065	4.49	CO
QEWNNC	X	0.0372	0.0109	6.75	0.0360	0.0115	7.93	OE
QMTJPG		0.0257	-0.0006	-0.36	0.0239	-0.0006	-0.44	OE
R6GLG3		0.0271	0.0008	0.48	0.0252	0.0007	0.48	CI
RB9LZQ		0.0230	-0.0033	-2.06	0.0210	-0.0035	-2.42	GD
RCNXX9		0.0227	-0.0037	-2.26	0.0220	-0.0025	-1.73	OE
RFH7RG	X	0.0339	0.0075	4.67	0.0327	0.0082	5.65	OE
RJ4YTC		0.0253	-0.0010	-0.61	0.0240	-0.0005	-0.35	OE
RN8WZH		0.0257	-0.0006	-0.38	0.0233	-0.0012	-0.81	XX
RWCCEJ		0.0287	0.0023	1.45	0.0261	0.0016	1.13	OE
T4L9NH		0.0300	0.0037	2.28	0.0267	0.0022	1.50	CI
TWYKP7		0.0254	-0.0009	-0.57	0.0238	-0.0007	-0.46	CO
UCWWXA		0.0248	-0.0016	-0.96	0.0237	-0.0008	-0.58	OE
UEGVZX		0.0267	0.0003	0.21	0.0240	-0.0005	-0.35	OE
UFDAQB		0.0276	0.0013	0.81	0.0262	0.0017	1.20	OE
UJ2LR2	X	0.0283	0.0020	1.25	0.0293	0.0048	3.34	OE
V9AUCM		0.0250	-0.0013	-0.80	0.0240	-0.0005	-0.37	CI
VKJJ2B		0.0263	-0.0001	-0.03	0.0241	-0.0004	-0.26	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1643

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WDHETR		0.0256	-0.0008	-0.47	0.0243	-0.0002	-0.12	OE
WJMBJJ		0.0271	0.0008	0.48	0.0242	-0.0003	-0.19	OE
WMLUGC		0.0261	-0.0002	-0.14	0.0245	0.0000	-0.03	OE
WNXBR4		0.0242	-0.0022	-1.33	0.0218	-0.0027	-1.89	OE
WTVWQ9	X	0.0244	-0.0020	-1.21	0.0189	-0.0057	-3.91	WD
WVZFQF		0.0297	0.0034	2.09	0.0282	0.0037	2.53	OE
WX4B6C		0.0245	-0.0018	-1.11	0.0235	-0.0010	-0.72	WD
WXZT38		0.0284	0.0021	1.31	0.0265	0.0020	1.38	OE
XXJT7W		0.0264	0.0001	0.05	0.0252	0.0007	0.46	CI
Y2YP77		0.0282	0.0019	1.16	0.0251	0.0006	0.41	CO
Y43KHA		0.0248	-0.0015	-0.92	0.0248	0.0003	0.23	OE
YEJ7U4		0.0279	0.0016	1.00	0.0257	0.0012	0.81	CO
YRBQE2		0.0263	0.0000	-0.03	0.0249	0.0004	0.29	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	0.0263	Percent	0.0245	Percent
Std Dev Btwn Labs	0.0016	Percent	0.0014	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 53 of 60 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1643

- F7YETW (X) - Data for both samples are high. Possible Systematic Error.
- GUT9NA (X) - Data for both samples are low. Possible Systematic Error.
- PK8FHJ (X) - Data for both samples are high. Possible Systematic Error.
- QEWNNC (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of sample M87.
- RFH7RG (X) - Data for both samples are high. Possible Systematic Error.
- UJ2LR2 (X) - Data for sample M88 are high.
- WTVWQ9 (X) - Data for sample M88 are low.



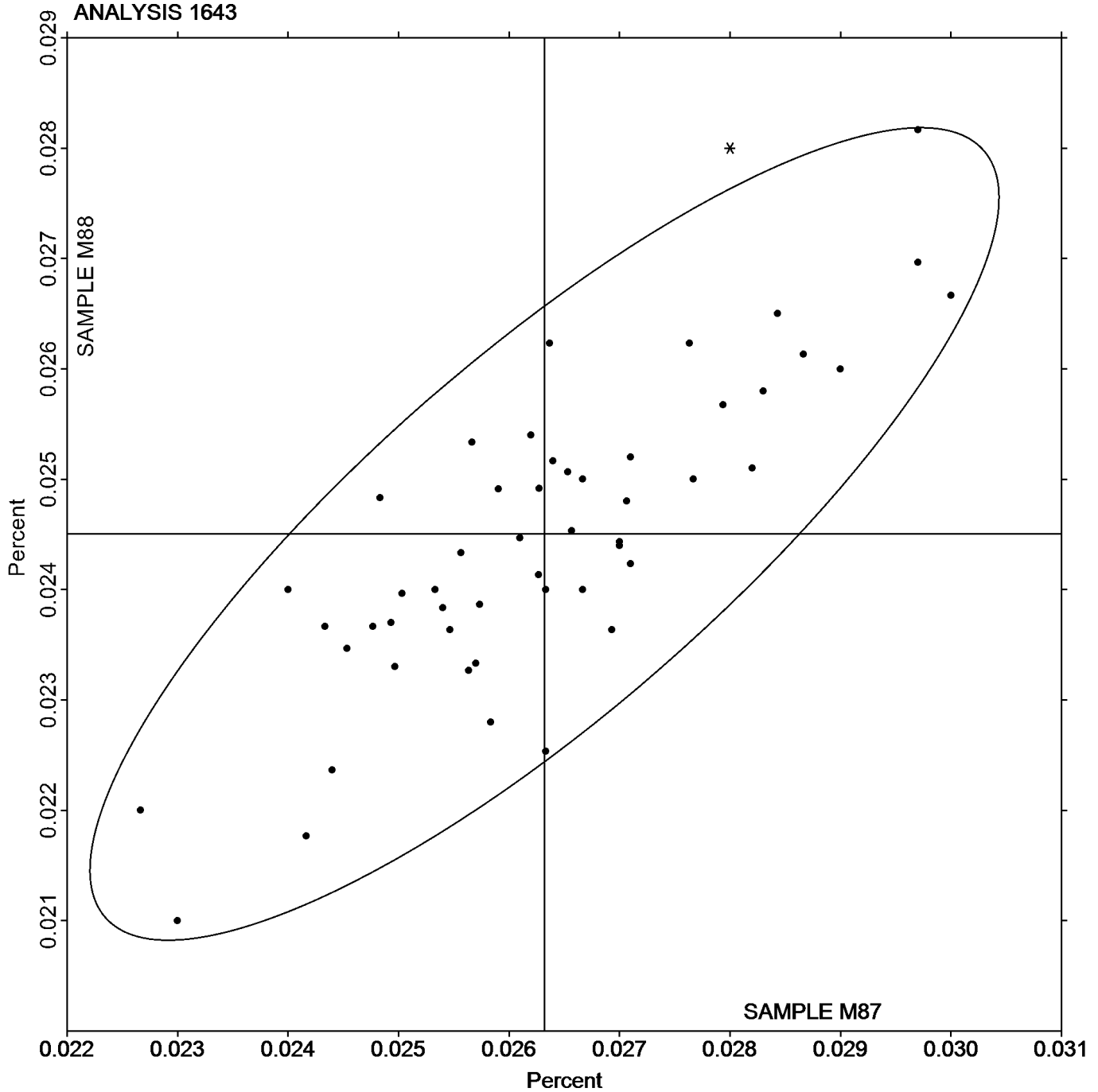
Analysis 1643

Corrosion Resistant Steel, SULFUR (S)

SULFUR (S)

SAMPLE M87
0.0263 Percent

SAMPLE M88
0.0245 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1644

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z		0.2720	-0.0149	-1.52	0.4960	-0.0057	-0.37	OE
2FRYUB		0.2870	0.0001	0.01	0.5037	0.0019	0.13	IC
2UQ8G6		0.2773	-0.0096	-0.97	0.4960	-0.0057	-0.37	OE
3LW69R		0.2867	-0.0002	-0.02	0.4767	-0.0251	-1.63	OE
43B9XQ		0.2767	-0.0102	-1.04	0.4950	-0.0067	-0.44	OE
4XJQQT		0.2763	-0.0106	-1.08	0.4870	-0.0147	-0.96	IC
6KUJ4P		0.2950	0.0081	0.83	0.5150	0.0133	0.86	OE
6NCJJ6	X	0.3811	0.0942	9.60	0.5317	0.0300	1.95	OE
7N94TD		0.2851	-0.0018	-0.18	0.4989	-0.0029	-0.19	WD
7XBPN4		0.2803	-0.0066	-0.67	0.4947	-0.0071	-0.46	OE
87N3BT		0.2900	0.0031	0.32	0.4933	-0.0084	-0.55	GD
99JCDT		0.2890	0.0021	0.21	0.4880	-0.0137	-0.89	XX
9ADZWP		0.2940	0.0071	0.72	0.5080	0.0063	0.41	OE
BRMP7R		0.2923	0.0054	0.55	0.5267	0.0249	1.62	OE
CXWZAT		0.2773	-0.0096	-0.97	0.4847	-0.0171	-1.11	XR
CXWZEY		0.3050	0.0181	1.84	0.5340	0.0323	2.10	OE
D8YT47		0.2887	0.0018	0.18	0.5033	0.0016	0.10	OE
F7YETW		0.2710	-0.0159	-1.62	0.4750	-0.0267	-1.74	OE
F8BCZL		0.2983	0.0114	1.17	0.5240	0.0223	1.45	IC
FFMCDA		0.2623	-0.0246	-2.50	0.4847	-0.0171	-1.11	OE
GUT9NA	X	0.3490	0.0621	6.33	0.5920	0.0903	5.87	OE
HEYV4K		0.2790	-0.0079	-0.80	0.4837	-0.0181	-1.17	WD
HLDP4B		0.2810	-0.0059	-0.60	0.4990	-0.0027	-0.18	OE
HZHVDL		0.2900	0.0031	0.32	0.5077	0.0059	0.38	WD
K9296G		0.2840	-0.0029	-0.29	0.4913	-0.0104	-0.68	XX
KKHTTK		0.2784	-0.0085	-0.87	0.4899	-0.0118	-0.77	GD
KKW6GH		0.2890	0.0021	0.21	0.5137	0.0119	0.77	OE
KPVFL4		0.2913	0.0044	0.45	0.5023	0.0006	0.04	OE
KVZ82T		0.2900	0.0031	0.32	0.4987	-0.0031	-0.20	OE
MHPJYA		0.2900	0.0031	0.32	0.4927	-0.0091	-0.59	GD
PHWKPZ		0.2870	0.0001	0.01	0.4940	-0.0077	-0.50	OE
PK8FHJ	X	0.2887	0.0018	0.18	0.4567	-0.0451	-2.93	IC
QEWNNC		0.2977	0.0108	1.10	0.4990	-0.0027	-0.18	OE
QMTJPG		0.2933	0.0064	0.66	0.5390	0.0373	2.42	OE
R6GLG3		0.2993	0.0124	1.27	0.5103	0.0086	0.56	IC
RB9LZQ		0.2880	0.0011	0.11	0.5060	0.0043	0.28	GD
RCNXX9	X	0.3400	0.0531	5.41	0.5433	0.0416	2.70	OE
RFH7RG		0.3080	0.0211	2.15	0.5117	0.0099	0.64	OE
RJ4YTC		0.2853	-0.0016	-0.16	0.4933	-0.0084	-0.55	OE
RN8WZH		0.2880	0.0011	0.11	0.5390	0.0373	2.42	OE
RWCCEJ		0.2863	-0.0006	-0.06	0.4840	-0.0177	-1.15	OE
T4L9NH		0.2900	0.0031	0.32	0.5000	-0.0017	-0.11	XR
UCWWXA		0.2723	-0.0146	-1.48	0.4780	-0.0237	-1.54	OE
UEGVZX		0.2900	0.0031	0.32	0.5167	0.0149	0.97	OE
UFDAQB		0.3000	0.0131	1.34	0.5083	0.0066	0.43	OE
UJ2LR2		0.2967	0.0098	1.00	0.5233	0.0216	1.40	OE
V9AUCM		0.2943	0.0074	0.76	0.4953	-0.0064	-0.42	IC



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1644

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
VKJJ2B		0.2908	0.0039	0.39	0.5046	0.0029	0.19	OE
WDHETR	*	0.2580	-0.0289	-2.94	0.4673	-0.0344	-2.24	WD
WJMBJJ		0.2800	-0.0069	-0.70	0.5000	-0.0017	-0.11	WD
WMLUGC		0.2897	0.0028	0.28	0.5097	0.0079	0.51	OE
WNXBR4		0.2897	0.0028	0.28	0.5263	0.0246	1.60	OE
WTVWQ9	X	0.1825	-0.1044	-10.64	0.4122	-0.0895	-5.82	WD
WVZFQF		0.2948	0.0079	0.81	0.5060	0.0043	0.28	OE
WX4B6C		0.2813	-0.0056	-0.57	0.4960	-0.0057	-0.37	WD
WXZT38		0.2873	0.0004	0.04	0.5033	0.0016	0.10	OE
XXJT7W		0.2930	0.0061	0.62	0.4980	-0.0037	-0.24	WD
Y2YP77		0.2857	-0.0012	-0.13	0.4970	-0.0047	-0.31	IC
Y43KHA		0.2687	-0.0182	-1.86	0.4980	-0.0037	-0.24	OE
YEJ7U4		0.2930	0.0061	0.63	0.5233	0.0215	1.40	OE
YRBQE2		0.3007	0.0138	1.40	0.5067	0.0049	0.32	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	0.2869	Percent	0.5017	Percent
Std Dev Btwn Labs	0.0098	Percent	0.0154	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 56 of 61 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1644

- 6NCJJ6 (X) - Data for sample M87 are high.
- GUT9NA (X) - Data for both samples are high.
- PK8FHJ (X) - Data for sample M88 are low.
- RCNXX9 (X) - Data for sample M87 are high. Inconsistent within the determinations of sample M87.
- WTVWQ9 (X) - Data for both samples are low.



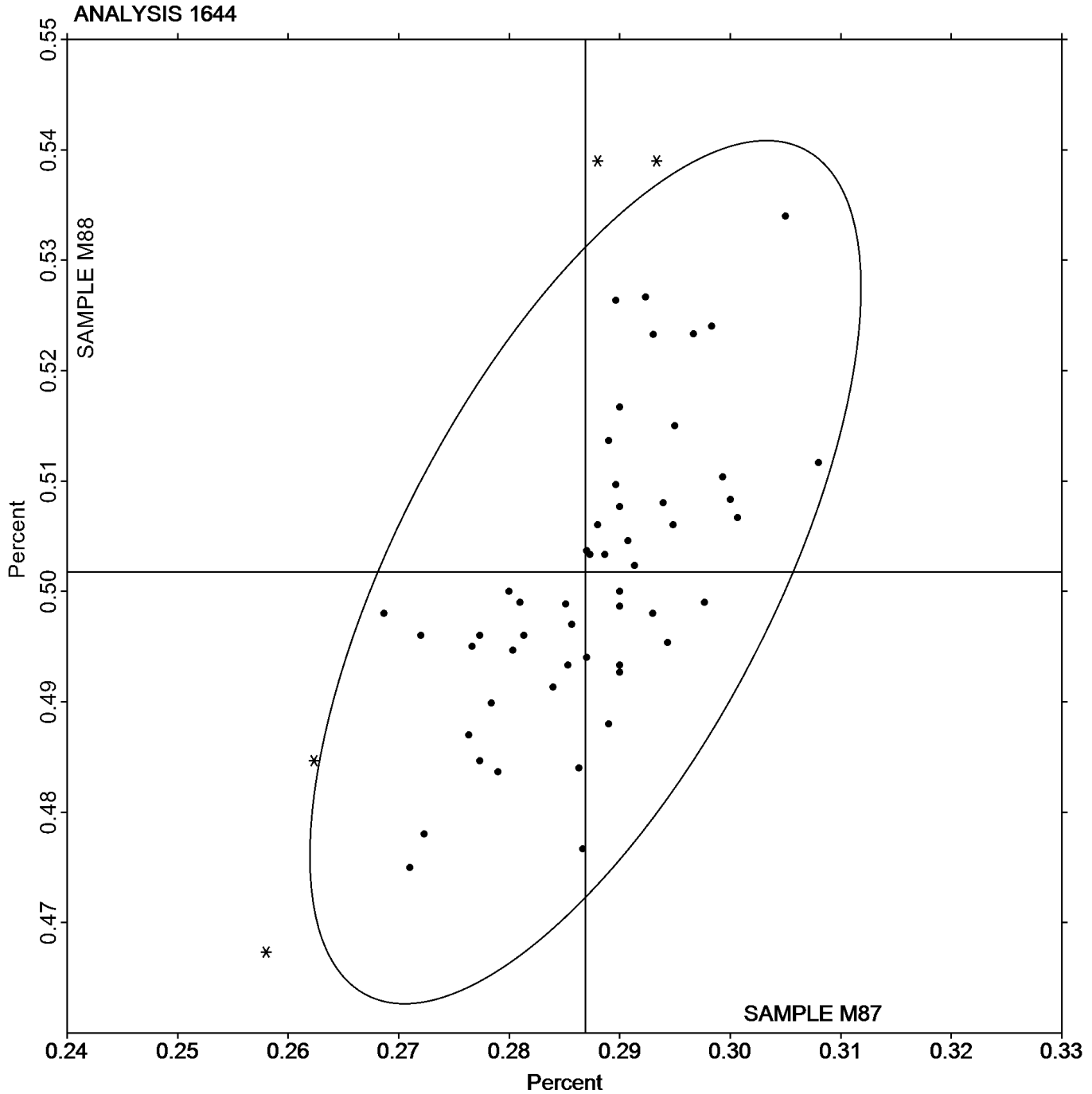
Analysis 1644

Corrosion Resistant Steel, SILICON (Si)

SILICON (Si)

SAMPLE M87
0.2869 Percent

SAMPLE M88
0.5017 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1645

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z	X	0.2810	0.0188	2.18	0.1290	0.0152	3.70	OE
2FRYUB		0.2657	0.0035	0.40	0.1153	0.0016	0.38	IC
2UQ8G6		0.2560	-0.0062	-0.72	0.1147	0.0009	0.22	OE
43B9XQ		0.2803	0.0181	2.10	0.1157	0.0019	0.46	OE
4XJQQT		0.2547	-0.0075	-0.87	0.1137	-0.0001	-0.02	IC
6KUJ4P		0.2590	-0.0032	-0.37	0.1180	0.0042	1.03	OE
6NCJJ6		0.2689	0.0067	0.77	0.1154	0.0017	0.40	OE
7N94TD		0.2663	0.0041	0.47	0.1156	0.0019	0.45	WD
7XBPN4		0.2647	0.0025	0.29	0.1123	-0.0014	-0.35	OE
87N3BT		0.2600	-0.0022	-0.26	0.1200	0.0062	1.51	GD
99JCDT		0.2663	0.0041	0.48	0.1150	0.0012	0.30	IC
9ADZWP		0.2686	0.0064	0.74	0.1126	-0.0011	-0.28	OE
BRMP7R		0.2400	-0.0222	-2.57	0.1053	-0.0084	-2.05	OE
CXWZAT		0.2560	-0.0062	-0.72	0.1137	-0.0001	-0.02	XR
CXWZEY		0.2620	-0.0002	-0.02	0.1120	-0.0018	-0.43	OE
D8YT47		0.2537	-0.0085	-0.99	0.1157	0.0019	0.46	OE
F8BCZL		0.2727	0.0105	1.21	0.1173	0.0036	0.87	IC
FFMCDA		0.2690	0.0068	0.79	0.1183	0.0046	1.11	OE
HEYV4K		0.2670	0.0048	0.56	0.1147	0.0009	0.22	WD
HLDP4B		0.2590	-0.0032	-0.37	0.1050	-0.0088	-2.13	OE
HZHVDL		0.2447	-0.0175	-2.03	0.1047	-0.0091	-2.21	WD
K9296G		0.2643	0.0021	0.25	0.1140	0.0002	0.06	XR
KKHTTK	X	0.2469	-0.0153	-1.77	0.0879	-0.0259	-6.28	GD
KKW6GH		0.2580	-0.0042	-0.49	0.1203	0.0066	1.59	OE
KPVFL4		0.2427	-0.0195	-2.26	0.1140	0.0002	0.06	OE
KVZ82T		0.2620	-0.0002	-0.02	0.1110	-0.0028	-0.67	OE
MHPJYA		0.2557	-0.0065	-0.76	0.1117	-0.0021	-0.51	GD
PHWKPZ		0.2727	0.0105	1.21	0.1117	-0.0021	-0.51	OE
PK8FHJ		0.2673	0.0051	0.59	0.1167	0.0029	0.70	IC
QEWNNC		0.2653	0.0031	0.36	0.1190	0.0052	1.27	OE
QMTJPG		0.2740	0.0118	1.36	0.1177	0.0039	0.95	OE
R6GLG3		0.2703	0.0081	0.94	0.1157	0.0019	0.46	IC
RB9LZQ		0.2610	-0.0012	-0.14	0.1210	0.0072	1.76	GD
RCNXX9	X	0.2167	-0.0455	-5.28	0.1100	-0.0038	-0.91	OE
RJ4YTC		0.2617	-0.0005	-0.06	0.1080	-0.0058	-1.40	OE
RN8WZH		0.2433	-0.0189	-2.19	0.1090	-0.0048	-1.16	OE
RWCCEJ		0.2643	0.0021	0.25	0.1100	-0.0038	-0.91	OE
T4L9NH		0.2800	0.0178	2.06	0.1200	0.0062	1.51	XR
UCWWXA		0.2687	0.0065	0.75	0.1133	-0.0004	-0.11	OE
UEGVZX		0.2600	-0.0022	-0.26	0.1200	0.0062	1.51	OE
UFDAQB		0.2560	-0.0062	-0.72	0.1087	-0.0051	-1.24	OE
UJ2LR2	X	0.3000	0.0378	4.38	0.1267	0.0129	3.13	OE
V9AUCM		0.2750	0.0128	1.48	0.1117	-0.0021	-0.51	IC
VKJJ2B		0.2622	0.0000	0.00	0.1140	0.0003	0.06	OE
WDHETR		0.2637	0.0015	0.17	0.1137	-0.0001	-0.02	WD
WJMJJJ		0.2587	-0.0035	-0.41	0.1120	-0.0018	-0.43	WD
WMLUGC		0.2583	-0.0039	-0.45	0.1160	0.0022	0.54	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1645

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WNXBR4		0.2603	-0.0019	-0.22	0.1137	-0.0001	-0.02	OE
WTVWQ9		0.2616	-0.0006	-0.07	0.1133	-0.0005	-0.11	WD
WVZFQF		0.2580	-0.0042	-0.49	0.1097	-0.0041	-1.00	OE
WX4B6C		0.2670	0.0048	0.56	0.1150	0.0012	0.30	WD
WXZT38		0.2650	0.0028	0.32	0.1077	-0.0061	-1.48	OE
XXJT7W		0.2713	0.0091	1.06	0.1180	0.0042	1.03	IC
Y2YP77		0.2597	-0.0025	-0.29	0.1130	-0.0008	-0.19	XX
YEJ7U4		0.2475	-0.0147	-1.70	0.1047	-0.0091	-2.20	OE
YRBQE2		0.2645	0.0023	0.27	0.1168	0.0030	0.73	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	0.2622	Percent	0.1138	Percent
Std Dev Btwn Labs	0.0086	Percent	0.0041	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 52 of 56 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1645

24AL9Z (X) - Data for sample M88 are high.

KKHTTK (X) - Data for sample M88 are low.

RCNXX9 (X) - Data for sample M87 are low. Inconsistent within the determinations of sample M87.

UJ2LR2 (X) - Data for both samples are high. Inconsistent within the determinations of sample M88.



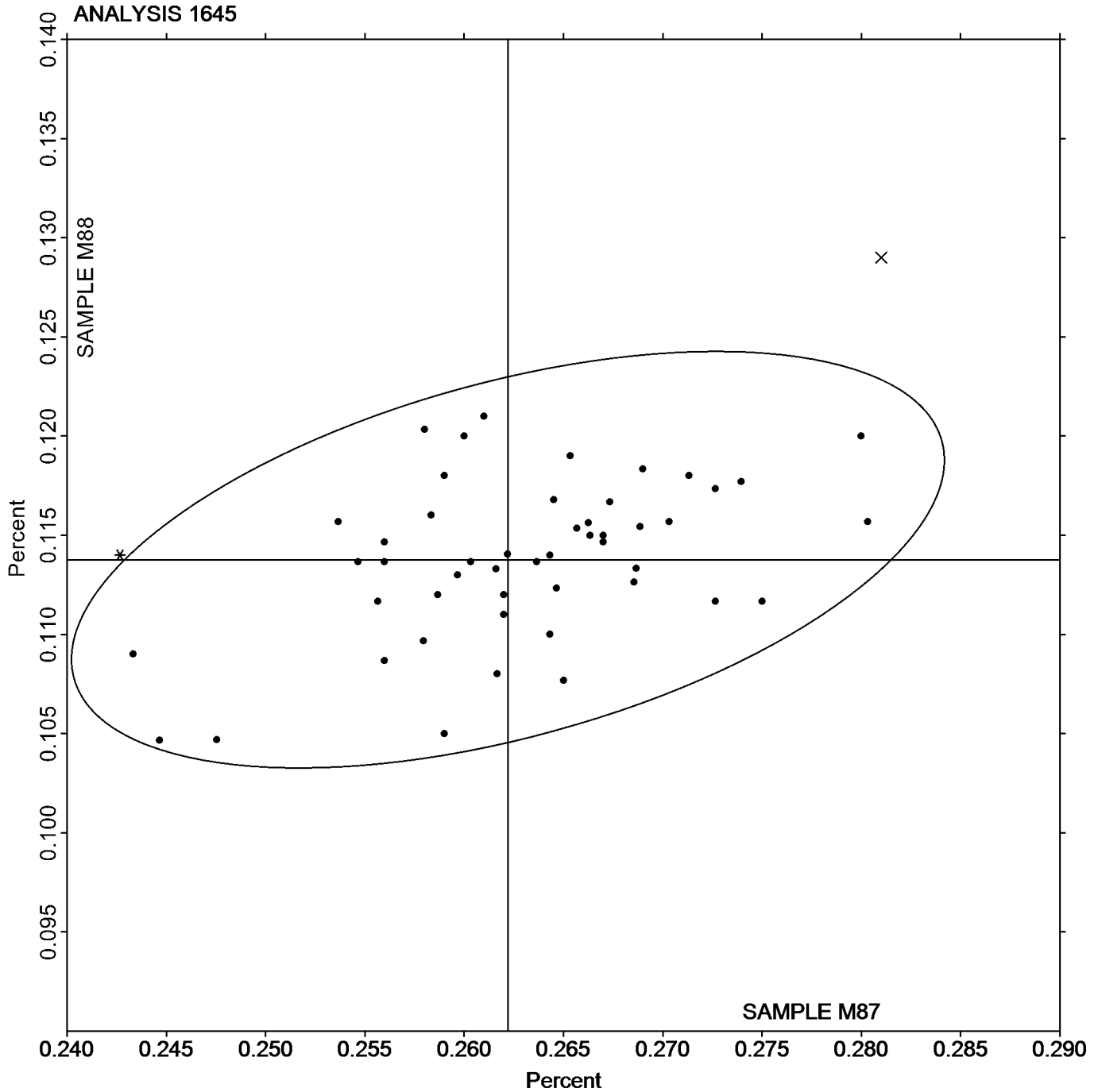
Analysis 1645

Corrosion Resistant Steel, COBALT (Co)

COBALT (Co)

SAMPLE M87
0.2622 Percent

SAMPLE M88
0.1138 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1646

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z	X	8.011	-0.227	-2.70	7.683	-0.439	-4.62	OE
2FRYUB		8.225	-0.013	-0.16	8.097	-0.025	-0.26	IC
2UQ8G6		8.237	-0.002	-0.02	8.107	-0.015	-0.16	OE
3LW69R		8.270	0.032	0.38	8.120	-0.002	-0.02	OE
43B9XQ		8.123	-0.115	-1.37	7.993	-0.128	-1.35	OE
4XJQQT		8.216	-0.022	-0.26	8.077	-0.045	-0.47	IC
6KUJ4P		8.298	0.060	0.71	8.055	-0.067	-0.70	OE
6NCJJ6	X	7.989	-0.249	-2.97	8.146	0.025	0.26	OE
7N94TD		8.218	-0.020	-0.24	8.058	-0.063	-0.67	WD
7XBPN4		8.190	-0.048	-0.57	8.083	-0.038	-0.40	OE
87N3BT		8.427	0.188	2.25	8.367	0.245	2.58	GD
99JCDT		8.147	-0.092	-1.09	7.997	-0.125	-1.31	IC
9ADZWP		8.357	0.119	1.42	8.248	0.126	1.33	OE
BRMP7R		8.143	-0.095	-1.13	8.020	-0.102	-1.07	OE
CXWZAT		8.193	-0.045	-0.54	8.031	-0.091	-0.96	XR
CXWZEY		8.019	-0.219	-2.61	7.909	-0.213	-2.24	OE
D8YT47		8.287	0.048	0.58	8.193	0.072	0.76	OE
F7YETW		8.283	0.045	0.54	8.130	0.008	0.09	OE
F8BCZL		8.339	0.100	1.20	8.149	0.027	0.29	IC
FFMCDA		8.253	0.015	0.18	8.133	0.012	0.12	OE
GUT9NA	X	8.131	-0.107	-1.27	8.391	0.270	2.84	OE
HEYV4K		8.274	0.035	0.42	8.118	-0.003	-0.03	WD
HLDP4B		8.220	-0.018	-0.22	8.047	-0.075	-0.78	OE
HZHVDL		8.258	0.020	0.24	8.109	-0.013	-0.13	WD
K9296G		8.204	-0.034	-0.40	8.051	-0.071	-0.74	XR
KKHTTK		8.168	-0.070	-0.84	8.130	0.008	0.09	GD
KKW6GH		8.147	-0.092	-1.09	8.067	-0.055	-0.58	OE
KPVFL4		8.263	0.025	0.30	8.107	-0.015	-0.16	OE
KVZ82T		8.345	0.107	1.27	8.296	0.174	1.84	OE
MHPJYA		8.217	-0.022	-0.26	8.150	0.028	0.30	GD
NJF7Q4		8.293	0.054	0.65	8.162	0.041	0.43	WC
PHWKPZ		8.256	0.018	0.22	8.216	0.094	0.99	OE
PK8FHJ		8.307	0.068	0.82	8.230	0.108	1.14	IC
QEWNNC		8.300	0.062	0.74	8.150	0.028	0.30	OE
QMTJPG	*	8.209	-0.030	-0.35	7.919	-0.203	-2.14	OE
R6GLG3	X	8.518	0.280	3.34	8.311	0.189	1.99	IC
RB9LZQ		8.290	0.052	0.62	8.180	0.058	0.62	GD
RCNXX9		8.187	-0.052	-0.61	8.093	-0.028	-0.30	OE
RFH7RG		8.238	0.000	0.00	8.204	0.082	0.86	OE
RJ4YTC		8.177	-0.062	-0.73	8.080	-0.042	-0.44	OE
RN8WZH		8.177	-0.062	-0.73	8.046	-0.076	-0.80	OE
RWCCEJ		8.340	0.102	1.21	8.190	0.068	0.72	OE
T4L9NH		8.250	0.012	0.14	8.123	0.002	0.02	XR
UCWWXA		8.307	0.068	0.82	8.200	0.078	0.83	OE
UEGVZX		8.133	-0.105	-1.25	7.973	-0.148	-1.56	OE
UFDAQB		8.047	-0.192	-2.28	7.957	-0.165	-1.74	OE
UJ2LR2		8.443	0.205	2.45	8.367	0.245	2.58	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1646

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V9AUCM		8.176	-0.063	-0.75	8.129	0.007	0.08	IC
VKJJ2B		8.217	-0.021	-0.25	8.110	-0.011	-0.12	OE
WDHETR		8.170	-0.069	-0.82	8.053	-0.069	-0.73	WD
WJMBJJ		8.239	0.000	0.01	8.098	-0.023	-0.24	XX
WMLUGC		8.213	-0.025	-0.30	8.157	0.035	0.37	OE
WNXBR4		8.320	0.082	0.98	8.250	0.128	1.35	OE
WTVWQ9		8.073	-0.165	-1.97	7.936	-0.185	-1.95	WD
WVZFQF		8.174	-0.064	-0.77	8.139	0.017	0.18	OE
WX4B6C		8.227	-0.012	-0.14	8.053	-0.068	-0.72	WD
WXZT38		8.380	0.142	1.69	8.243	0.122	1.28	OE
XXJT7W		8.224	-0.014	-0.16	8.090	-0.032	-0.33	WD
Y2YP77		8.290	0.052	0.62	8.160	0.039	0.41	IC
Y43KHA		8.342	0.103	1.23	8.283	0.162	1.70	OE
YEJ7U4		8.252	0.014	0.17	8.133	0.011	0.12	OE
YRBQE2		8.215	-0.024	-0.28	8.082	-0.040	-0.42	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	8.238	Percent	8.122	Percent
Stnd Dev Btwn Labs	0.084	Percent	0.095	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 57 of 62 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1646

24AL9Z (X) - Data for sample M88 are low. Inconsistent within the determinations of sample M88.

6NCJJ6 (X) - Data for sample M87 are low.

GUT9NA (X) - Data for sample M88 are high. Inconsistent within the determinations of sample M87.

R6GLG3 (X) - Data for sample M87 are high. Inconsistent within the determinations of both samples.



Analysis 1646

Corrosion Resistant Steel, NICKEL (Ni)

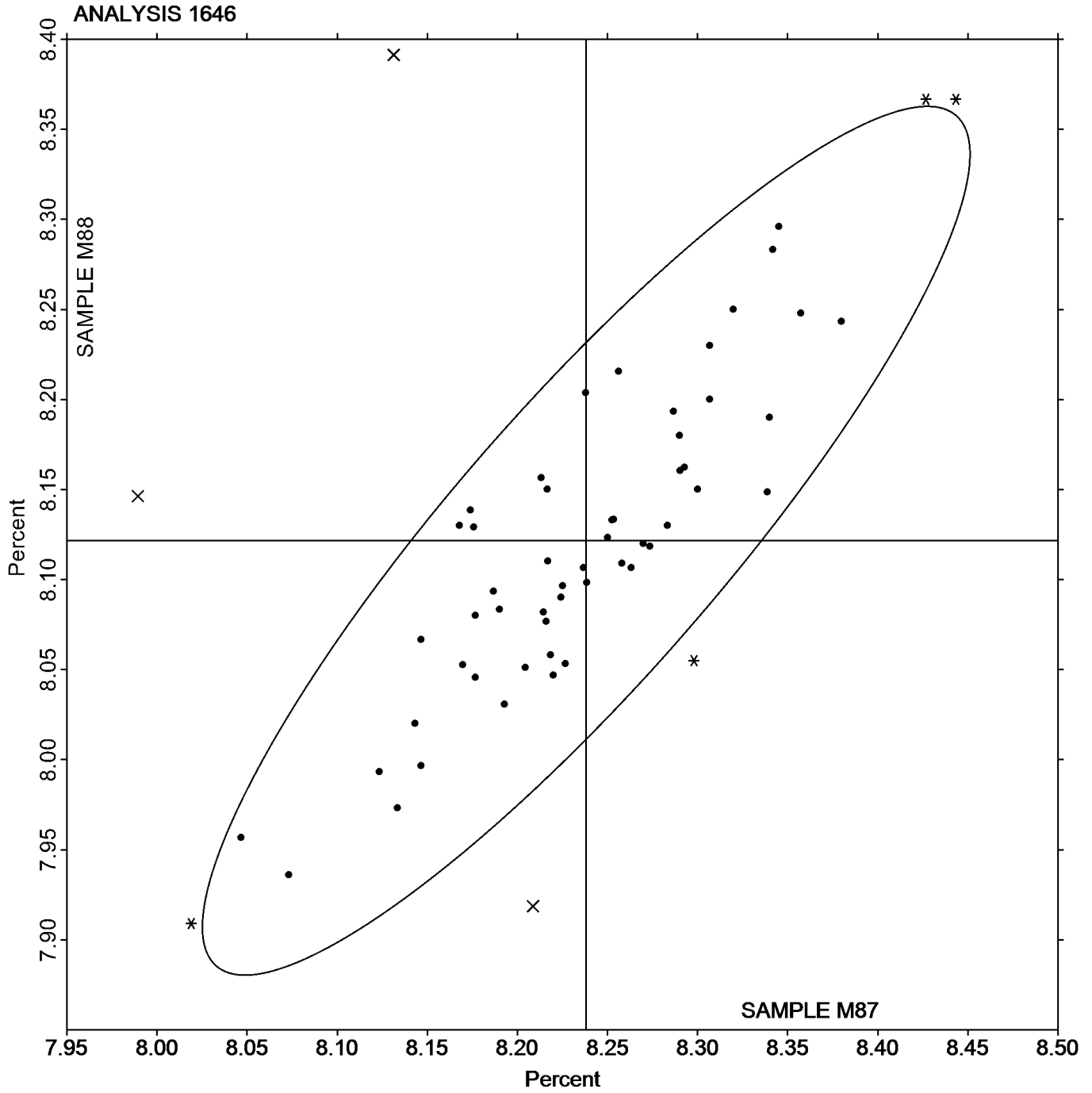
NICKEL (Ni)

SAMPLE M87

8.238 Percent

SAMPLE M88

8.122 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1647

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z	X	18.67	0.40	3.69	18.34	0.16	1.63	OE
2FRYUB		18.17	-0.10	-0.87	18.06	-0.12	-1.21	IC
2UQ8G6		18.25	-0.02	-0.17	18.17	-0.01	-0.07	OE
3LW69R		18.25	-0.02	-0.17	18.19	0.01	0.09	OE
43B9XQ		18.34	0.08	0.72	18.29	0.11	1.09	OE
4XJQQT		18.16	-0.10	-0.94	18.04	-0.14	-1.41	IC
6KUJ4P		18.04	-0.23	-2.07	18.06	-0.12	-1.21	OE
6NCJJ6		18.35	0.09	0.81	18.17	-0.01	-0.07	OE
7N94TD		18.26	0.00	-0.04	18.16	-0.02	-0.19	WD
7XBPN4		18.12	-0.15	-1.33	18.04	-0.14	-1.44	OE
87N3BT		18.03	-0.23	-2.13	18.03	-0.15	-1.48	GD
99JCDT	X	17.47	-0.80	-7.34	17.57	-0.61	-6.15	IC
9ADZWP		18.26	0.00	-0.01	18.09	-0.09	-0.95	OE
BRMP7R		18.28	0.01	0.11	18.14	-0.04	-0.38	OE
CXWZAT		18.20	-0.06	-0.57	18.15	-0.03	-0.34	XR
CXWZEY		18.25	-0.02	-0.14	18.16	-0.02	-0.21	OE
D8YT47		18.34	0.08	0.72	18.13	-0.05	-0.51	OE
F7YETW		18.21	-0.06	-0.51	18.14	-0.04	-0.41	OE
F8BCZL		18.25	-0.02	-0.14	18.09	-0.09	-0.94	XX
FFMCDA		18.34	0.07	0.69	18.26	0.08	0.76	OE
GUT9NA		18.43	0.16	1.52	18.31	0.13	1.26	OE
HEYV4K		18.34	0.07	0.68	18.24	0.06	0.59	WD
HLDP4B		18.50	0.23	2.12	18.39	0.21	2.07	OE
HZHVDL		18.39	0.13	1.16	18.32	0.13	1.35	WD
K9296G		18.21	-0.06	-0.51	18.15	-0.03	-0.32	XR
KKHTTK	X	18.57	0.30	2.78	18.27	0.09	0.86	GD
KKW6GH		18.36	0.10	0.90	18.29	0.11	1.13	OE
KPVFL4		18.22	-0.05	-0.41	18.25	0.07	0.73	OE
KVZ82T		18.29	0.03	0.26	18.25	0.07	0.69	OE
MHPJYA		18.07	-0.20	-1.82	18.00	-0.18	-1.81	GD
NJF7Q4		18.25	-0.01	-0.13	18.11	-0.07	-0.68	WC
PHWKPZ		18.31	0.05	0.44	18.23	0.05	0.49	OE
PK8FHJ		18.29	0.02	0.20	18.22	0.04	0.43	IC
QEWNNC		18.27	0.00	0.05	18.21	0.03	0.26	OE
QMTJPG		18.32	0.06	0.53	18.11	-0.07	-0.72	OE
R6GLG3	X	18.91	0.65	5.96	18.73	0.55	5.50	IC
RB9LZQ		18.50	0.23	2.16	18.40	0.22	2.20	GD
RCNXX9		18.42	0.15	1.42	18.33	0.15	1.53	OE
RFH7RG		18.17	-0.10	-0.87	18.10	-0.08	-0.78	OE
RJ4YTC		18.39	0.12	1.12	18.33	0.15	1.53	OE
RN8WZH		18.25	-0.01	-0.11	18.20	0.02	0.16	OE
RWCCEJ		18.37	0.10	0.96	18.26	0.08	0.83	OE
T4L9NH		18.38	0.11	1.03	18.29	0.11	1.09	XR
UCWWXA		18.40	0.13	1.21	18.32	0.14	1.36	OE
UEGVZX		18.18	-0.09	-0.78	18.10	-0.08	-0.78	OE
UFDAQB		18.21	-0.05	-0.48	18.12	-0.06	-0.64	OE
UJ2LR2		18.43	0.17	1.55	18.38	0.20	2.03	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1647

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
V9AUCM	*	18.07	-0.20	-1.82	18.24	0.06	0.59	IC
VKJJ2B		18.21	-0.05	-0.49	18.16	-0.02	-0.23	OE
WDHETR		18.13	-0.14	-1.27	18.10	-0.08	-0.78	WD
WJMBJJ		18.23	-0.03	-0.30	18.16	-0.02	-0.21	WD
WMLUGC		18.21	-0.06	-0.51	18.14	-0.04	-0.44	OE
WNXBR4		18.34	0.07	0.66	18.28	0.10	0.99	OE
WTVWQ9		18.24	-0.02	-0.22	18.15	-0.03	-0.28	WD
WVZFQF		18.20	-0.07	-0.62	18.21	0.03	0.30	OE
WX4B6C		18.29	0.02	0.20	18.15	-0.03	-0.31	WD
WXZT38		18.03	-0.23	-2.13	17.99	-0.19	-1.94	OE
XXJT7W		18.24	-0.03	-0.24	18.15	-0.03	-0.29	WD
Y2YP77		18.36	0.10	0.90	18.16	-0.03	-0.26	IC
Y43KHA		18.29	0.03	0.24	18.16	-0.03	-0.26	OE
YEJ7U4		18.18	-0.08	-0.77	18.19	0.01	0.08	OE
YRBQE2		18.09	-0.17	-1.59	18.03	-0.15	-1.47	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	18.27	Percent	18.18	Percent
Stnd Dev Btwn Labs	0.11	Percent	0.10	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 57 of 62 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1647

- 24AL9Z (X) - Data for sample M87 are high. Inconsistent within the determinations of both samples.
- 99JCDT (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample M88.
- KKHTTK (X) - Data for sample M87 are high.
- R6GLG3 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.



Analysis 1647

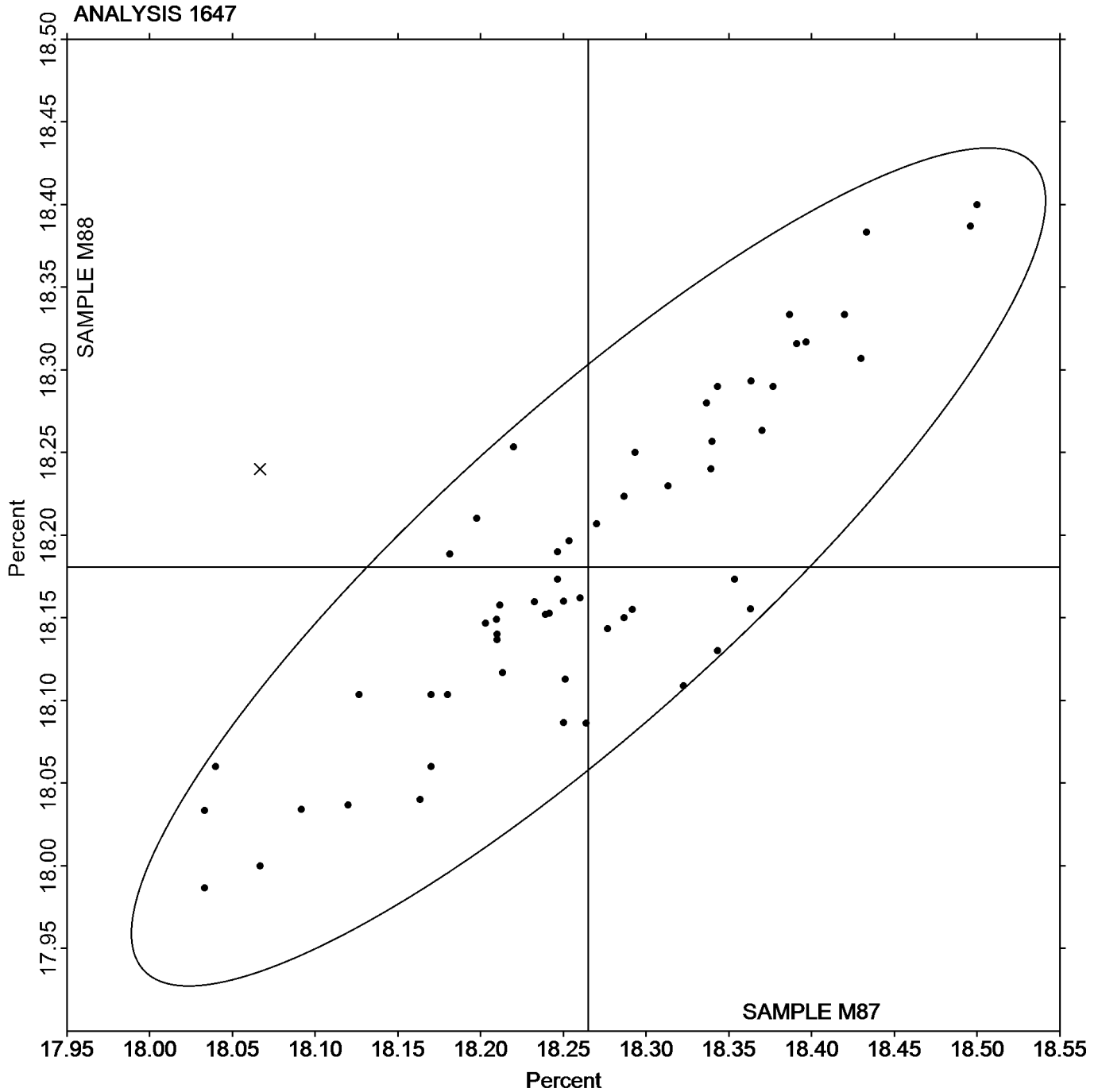
Corrosion Resistant Steel, CHROMIUM (Cr)
CHROMIUM (Cr)

SAMPLE M87

SAMPLE M88

18.27 Percent

18.18 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140

Analysis 1648

4th Qtr 2022

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z		0.5120	0.0000	0.00	0.5960	0.0081	0.45	OE
2FRYUB		0.5010	-0.0110	-0.77	0.5770	-0.0109	-0.61	IC
2UQ8G6	*	0.5520	0.0400	2.78	0.6307	0.0427	2.40	OE
43B9XQ		0.5200	0.0080	0.55	0.5950	0.0071	0.40	OE
4XJQQT		0.5077	-0.0044	-0.30	0.5827	-0.0053	-0.30	IC
6KUJ4P		0.5020	-0.0100	-0.70	0.5690	-0.0189	-1.06	OE
6NCJJ6		0.4754	-0.0366	-2.55	0.5475	-0.0404	-2.27	OE
7N94TD		0.5119	-0.0002	-0.01	0.5875	-0.0004	-0.02	WD
7XBPN4		0.5240	0.0120	0.83	0.5987	0.0107	0.60	OE
87N3BT	X	0.5633	0.0513	3.57	0.6300	0.0421	2.37	GD
99JCDT		0.5120	0.0000	0.00	0.5883	0.0004	0.02	IC
9ADZWP	*	0.5271	0.0151	1.05	0.5896	0.0017	0.10	OE
BRMP7R		0.4900	-0.0220	-1.53	0.5600	-0.0279	-1.57	OE
CXWZAT		0.5167	0.0046	0.32	0.5930	0.0051	0.29	XR
CXWZEY		0.5200	0.0080	0.55	0.6000	0.0121	0.68	OE
D8YT47		0.5033	-0.0087	-0.61	0.5800	-0.0079	-0.45	OE
F7YETW		0.5110	-0.0010	-0.07	0.5893	0.0014	0.08	OE
F8BCZL		0.5280	0.0160	1.11	0.6077	0.0197	1.11	IC
FFMCDA		0.4863	-0.0257	-1.79	0.5553	-0.0326	-1.83	OE
HEYV4K		0.5127	0.0006	0.04	0.5890	0.0011	0.06	WD
HLDP4B		0.5160	0.0040	0.28	0.5990	0.0111	0.62	OE
HZHVDL		0.5207	0.0086	0.60	0.5957	0.0077	0.44	WD
K9296G		0.5183	0.0063	0.44	0.5953	0.0074	0.42	XR
KKHTTK		0.5013	-0.0107	-0.75	0.5782	-0.0097	-0.55	GD
KKW6GH		0.5123	0.0003	0.02	0.5853	-0.0026	-0.15	OE
KPVFL4		0.5093	-0.0027	-0.19	0.5853	-0.0026	-0.15	OE
KVZ82T		0.5053	-0.0067	-0.47	0.5830	-0.0049	-0.28	OE
MHPJYA	*	0.5160	0.0040	0.28	0.6270	0.0391	2.20	GD
PHWKPZ		0.4970	-0.0150	-1.05	0.5650	-0.0229	-1.29	OE
PK8FHJ		0.5160	0.0040	0.28	0.5937	0.0057	0.32	IC
QEWNNC		0.4853	-0.0267	-1.86	0.5513	-0.0366	-2.06	OE
QMTJPG		0.5273	0.0153	1.06	0.6168	0.0289	1.63	OE
R6GLG3		0.5160	0.0040	0.28	0.5860	-0.0019	-0.11	IC
RB9LZQ		0.4870	-0.0250	-1.74	0.5480	-0.0399	-2.25	GD
RCNXX9		0.5000	-0.0120	-0.84	0.5733	-0.0146	-0.82	OE
RFH7RG	*	0.5060	-0.0060	-0.42	0.6123	0.0244	1.37	OE
RJ4YTC		0.5090	-0.0030	-0.21	0.5837	-0.0043	-0.24	OE
RN8WZH		0.4927	-0.0194	-1.35	0.5607	-0.0273	-1.53	OE
RWCCEJ	*	0.5493	0.0373	2.60	0.6210	0.0331	1.86	OE
T4L9NH		0.5100	-0.0020	-0.14	0.5900	0.0021	0.12	XR
UCWWXA		0.5383	0.0263	1.83	0.6137	0.0257	1.45	OE
UEGVZX		0.5267	0.0146	1.02	0.6033	0.0154	0.87	OE
UFDAQB		0.5437	0.0316	2.20	0.6247	0.0367	2.07	OE
UJ2LR2	X	0.4500	-0.0620	-4.32	0.5133	-0.0746	-4.20	OE
V9AUCM	*	0.5167	0.0046	0.32	0.5747	-0.0133	-0.75	IC
VKJJ2B		0.5283	0.0163	1.13	0.6112	0.0233	1.31	OE
WDHETR		0.5187	0.0066	0.46	0.5940	0.0061	0.34	WD



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1648

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WJMBJJ		0.5120	0.0000	0.00	0.5887	0.0007	0.04	WD
WMLUGC		0.5187	0.0066	0.46	0.5980	0.0101	0.57	OE
WNXBR4	X	0.4563	-0.0557	-3.88	0.5283	-0.0596	-3.35	OE
WTVWQ9		0.5025	-0.0095	-0.66	0.5812	-0.0067	-0.38	WD
WVZFQF		0.5174	0.0054	0.37	0.5903	0.0023	0.13	OE
WX4B6C		0.5120	0.0000	0.00	0.5877	-0.0003	-0.01	WD
WXZT38		0.5140	0.0020	0.14	0.5900	0.0021	0.12	OE
XXJT7W		0.5130	0.0010	0.07	0.5890	0.0011	0.06	WD
Y2YP77		0.5010	-0.0110	-0.77	0.5807	-0.0073	-0.41	IC
Y43KHA		0.5237	0.0116	0.81	0.5977	0.0097	0.55	OE
YEJ7U4		0.5188	0.0067	0.47	0.6054	0.0175	0.98	OE
YRBQE2		0.5158	0.0037	0.26	0.5919	0.0040	0.22	XX

Summary Statistics		Sample M87		Sample M88	
Grand Means		0.5120	Percent	0.5879	Percent
Stnd Dev Btwn Labs		0.0144	Percent	0.0178	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 51 of 59 reporting participants

Key to Method Codes Reported by Participants

- GD Spectrometry - Glow Discharge (GDS)
- OE Spectrometry - Optical Emission (OES)
- XR X-Ray Fluorescence - ED or WD not specified
- 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 #1648

- 87N3BT (X) - Data for sample M87 are high.
- UJ2LR2 (X) - Data for both samples are low.
- WNXBR4 (X) - Data for both samples are low.

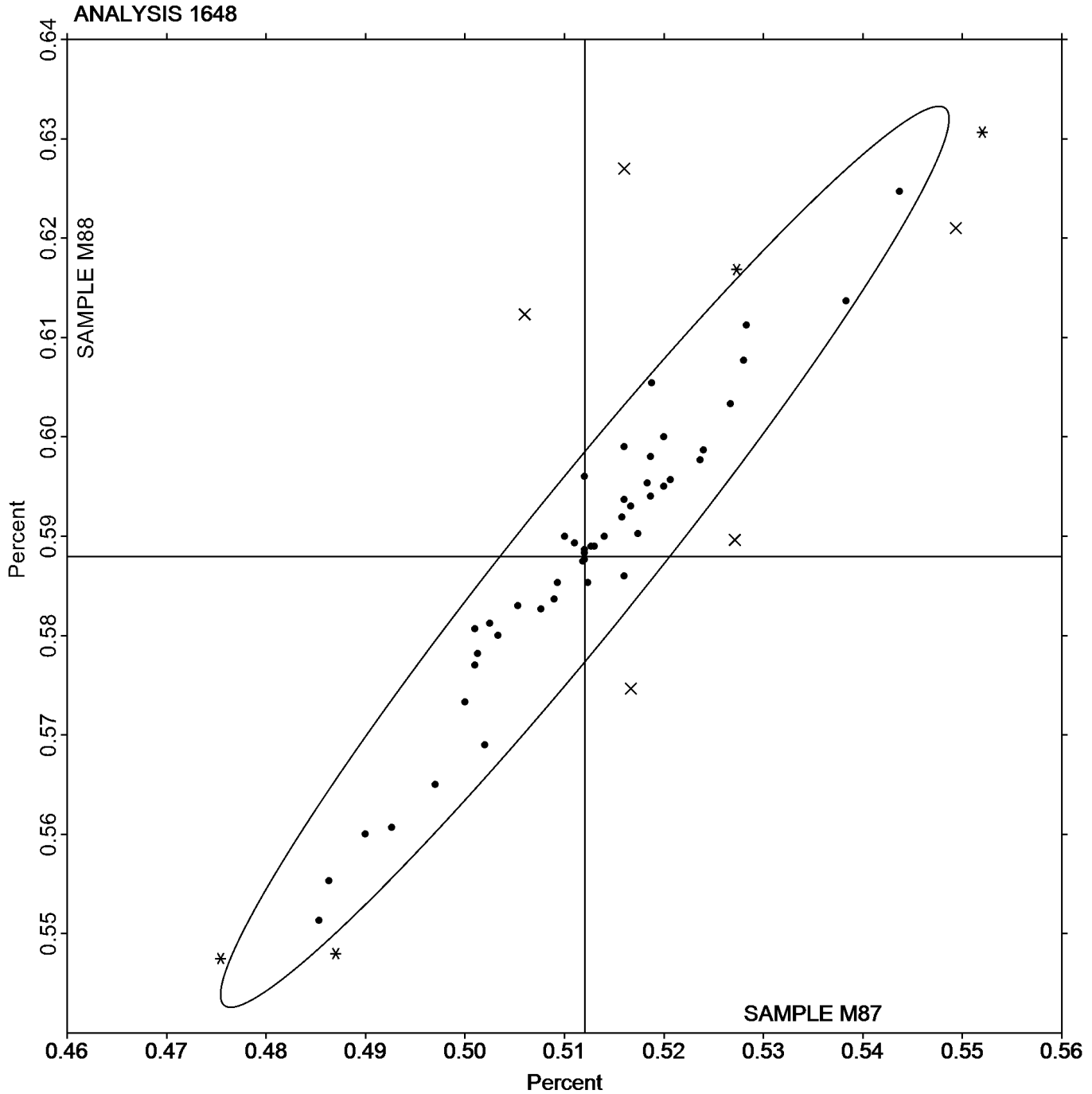


Analysis 1648

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

SAMPLE M87
0.5120 Percent

SAMPLE M88
0.5879 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1649

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z	X	0.4407	-0.0508	-4.82	0.4497	-0.0535	-4.74	OE
2FRYUB		0.4913	-0.0001	-0.01	0.5037	0.0005	0.04	IC
2UQ8G6		0.4863	-0.0051	-0.48	0.4970	-0.0062	-0.55	OE
43B9XQ		0.4780	-0.0134	-1.27	0.4910	-0.0122	-1.08	OE
4XJQQT		0.4827	-0.0088	-0.83	0.4960	-0.0072	-0.64	IC
6KUJ4P		0.4940	0.0026	0.25	0.5080	0.0048	0.43	OE
6NCJJ6		0.4943	0.0029	0.28	0.5153	0.0121	1.07	OE
7N94TD		0.4930	0.0015	0.15	0.5022	-0.0009	-0.08	WD
7XBPN4		0.4747	-0.0168	-1.59	0.4860	-0.0172	-1.52	OE
87N3BT		0.5100	0.0186	1.77	0.5200	0.0168	1.49	GD
99JCDT		0.4687	-0.0228	-2.16	0.4803	-0.0228	-2.02	IC
9ADZWP		0.4821	-0.0093	-0.88	0.4950	-0.0082	-0.72	OE
BRMP7R		0.5067	0.0152	1.45	0.5200	0.0168	1.49	OE
CXWZAT		0.4867	-0.0048	-0.45	0.4953	-0.0078	-0.69	XR
CXWZEY	*	0.4620	-0.0294	-2.79	0.4740	-0.0292	-2.58	OE
D8YT47		0.5000	0.0086	0.82	0.5067	0.0035	0.31	OE
F7YETW		0.4787	-0.0128	-1.21	0.4920	-0.0112	-0.99	OE
F8BCZL		0.4967	0.0052	0.50	0.5067	0.0035	0.31	XX
FFMCDA		0.4947	0.0032	0.31	0.5063	0.0032	0.28	OE
GUT9NA		0.4890	-0.0024	-0.23	0.4893	-0.0138	-1.23	OE
HEYV4K		0.4993	0.0079	0.75	0.5117	0.0085	0.75	WD
HLDP4B		0.4840	-0.0074	-0.70	0.4880	-0.0152	-1.34	OE
HZHVDL		0.4960	0.0046	0.44	0.5053	0.0022	0.19	WD
K9296G		0.4930	0.0016	0.15	0.5023	-0.0008	-0.07	XR
KKHTTK		0.4887	-0.0027	-0.26	0.4923	-0.0109	-0.96	GD
KKW6GH		0.4867	-0.0048	-0.45	0.5017	-0.0015	-0.13	OE
KPVFL4		0.5130	0.0216	2.05	0.5333	0.0302	2.67	OE
KVZ82T		0.4907	-0.0008	-0.07	0.5047	0.0015	0.13	OE
MHPJYA		0.4923	0.0009	0.09	0.5077	0.0045	0.40	GD
PHWKPZ		0.4847	-0.0068	-0.64	0.5027	-0.0005	-0.05	OE
PK8FHJ		0.4833	-0.0081	-0.77	0.4940	-0.0092	-0.81	IC
QEWNNC		0.4967	0.0052	0.50	0.5053	0.0022	0.19	OE
QMTJPG		0.5016	0.0102	0.97	0.5092	0.0060	0.53	OE
R6GLG3		0.4977	0.0062	0.59	0.5007	-0.0025	-0.22	IC
RB9LZQ		0.5120	0.0206	1.96	0.5220	0.0188	1.67	GD
RCNXX9		0.4900	-0.0014	-0.13	0.5067	0.0035	0.31	OE
RFH7RG		0.4747	-0.0168	-1.59	0.4873	-0.0158	-1.40	OE
RJ4YTC		0.4967	0.0052	0.50	0.5110	0.0078	0.69	OE
RN8WZH		0.4700	-0.0214	-2.03	0.4787	-0.0245	-2.17	OE
RWCCEJ		0.4960	0.0046	0.44	0.5067	0.0035	0.31	OE
T4L9NH		0.4900	-0.0014	-0.13	0.5000	-0.0032	-0.28	XR
UCWWXA		0.4927	0.0012	0.12	0.5057	0.0025	0.22	OE
UEGVZX		0.5100	0.0186	1.77	0.5233	0.0202	1.79	OE
UFDAQB		0.5033	0.0119	1.13	0.5170	0.0138	1.22	OE
UJ2LR2	X	0.4333	-0.0581	-5.52	0.4467	-0.0565	-5.01	OE
V9AUCM	*	0.5117	0.0202	1.92	0.5000	-0.0032	-0.28	IC
VKJJ2B		0.4939	0.0024	0.23	0.5025	-0.0007	-0.06	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1649

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WDHETR		0.4903	-0.0011	-0.10	0.5030	-0.0002	-0.02	WD
WJMBJJ		0.5100	0.0186	1.77	0.5200	0.0168	1.49	WD
WMLUGC		0.4930	0.0016	0.15	0.5070	0.0038	0.34	OE
WNXBR4		0.4820	-0.0094	-0.89	0.4970	-0.0062	-0.55	OE
WTVWQ9		0.4893	-0.0022	-0.21	0.4998	-0.0034	-0.30	WD
WVZFQF		0.4893	-0.0022	-0.20	0.5054	0.0022	0.20	OE
WX4B6C		0.4920	0.0006	0.06	0.5007	-0.0025	-0.22	WD
WXZT38		0.4883	-0.0031	-0.29	0.5073	0.0042	0.37	OE
XXJT7W		0.4934	0.0019	0.19	0.5057	0.0025	0.22	WD
Y2YP77		0.4940	0.0026	0.25	0.5083	0.0052	0.46	IC
Y43KHA		0.4922	0.0007	0.07	0.5102	0.0070	0.62	OE
YEJ7U4	X	0.4516	-0.0398	-3.78	0.4657	-0.0375	-3.32	OE
YRBQE2		0.4994	0.0080	0.76	0.5090	0.0058	0.52	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	0.4914	Percent	0.5032	Percent
Std Dev Btwn Labs	0.0105	Percent	0.0113	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 56 of 60 reporting participants

Key to Method Codes Reported by Participants

- GD** Spectrometry - Glow Discharge (GDS)
- OE** Spectrometry - Optical Emission (OES)
- XR** X-Ray Fluorescence - ED or WD not specified
- 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 #1649

- 24AL9Z (X) - Data for both samples are low. Possible Systematic Error.
- UJ2LR2 (X) - Data for both samples are low. Possible Systematic Error.
- YEJ7U4 (X) - Data for both samples are low. Possible Systematic Error. Inconsistent within the determinations of sample M87.



Fasteners and Metals Interlaboratory Testing Program

Cycle 140

Analysis 1649

4th Qtr 2022

Corrosion Resistant Steel, COPPER (Cu)

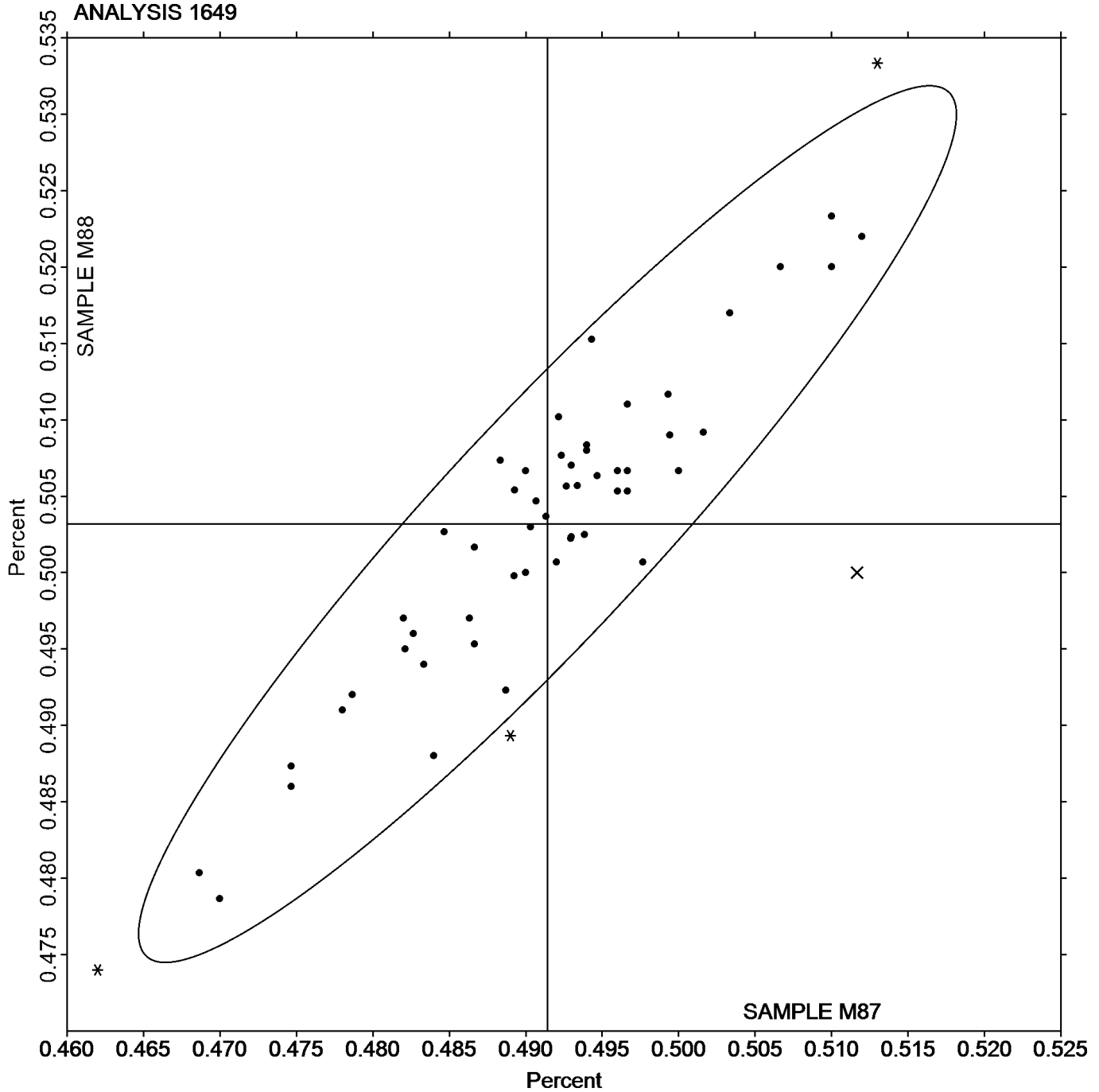
COPPER (Cu)

SAMPLE M87

0.4914 Percent

SAMPLE M88

0.5032 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1651

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

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z	X	0.0627	0.0186	2.89	0.0520	0.0286	4.74	OE
2FRYUB		0.0443	0.0003	0.05	0.0203	-0.0030	-0.50	IC
2UQ8G6		0.0533	0.0093	1.44	0.0317	0.0083	1.38	OE
43B9XQ		0.0413	-0.0027	-0.43	0.0195	-0.0038	-0.63	OE
4XJQQT		0.0439	-0.0001	-0.02	0.0192	-0.0041	-0.68	IC
6KUJ4P		0.0450	0.0010	0.15	0.0219	-0.0015	-0.24	OE
6NCJJ6		0.0449	0.0009	0.14	0.0217	-0.0016	-0.27	OE
7N94TD		0.0495	0.0054	0.84	0.0271	0.0037	0.61	WD
7XBPN4	M	0.0433	-0.0007	-0.11	No Data Reported			OE
87N3BT		0.0400	-0.0040	-0.63	0.0200	-0.0034	-0.55	GD
99JCDT		0.0440	0.0000	-0.01	0.0210	-0.0024	-0.39	IC
9ADZWP		0.0462	0.0022	0.34	0.0250	0.0017	0.28	OE
BRMP7R		0.0380	-0.0060	-0.94	0.0200	-0.0034	-0.55	OE
CXWZEY		0.0580	0.0140	2.17	0.0379	0.0145	2.41	OE
D8YT47		0.0417	-0.0024	-0.37	0.0263	0.0030	0.49	OE
F8BCZL		0.0417	-0.0024	-0.37	0.0150	-0.0084	-1.38	IC
FFMCDA		0.0387	-0.0054	-0.83	0.0227	-0.0007	-0.11	OE
HEYV4K		0.0500	0.0060	0.93	0.0263	0.0030	0.49	WD
HLDP4B		0.0420	-0.0020	-0.32	0.0220	-0.0014	-0.22	OE
HZHVDL		0.0590	0.0150	2.32	0.0337	0.0103	1.71	WD
KKHTTK		0.0390	-0.0050	-0.78	0.0270	0.0036	0.60	GD
KKW6GH		0.0471	0.0031	0.48	0.0251	0.0018	0.29	OE
KPVFL4		0.0450	0.0010	0.15	0.0231	-0.0003	-0.05	OE
KVZ82T		0.0462	0.0022	0.34	0.0230	-0.0003	-0.05	OE
MHPJYA		0.0447	0.0007	0.11	0.0250	0.0017	0.28	GD
PHWKPZ		0.0340	-0.0100	-1.56	0.0240	0.0006	0.11	OE
PK8FHJ		0.0433	-0.0007	-0.11	0.0147	-0.0087	-1.44	IC
QEWNNC		0.0374	-0.0066	-1.03	0.0155	-0.0079	-1.30	OE
QMTJPG		0.0405	-0.0036	-0.55	0.0243	0.0009	0.15	OE
R6GLG3		0.0491	0.0050	0.78	0.0200	-0.0034	-0.55	IC
RB9LZQ		0.0480	0.0040	0.61	0.0290	0.0056	0.93	GD
RJ4YTC		0.0473	0.0033	0.51	0.0270	0.0036	0.60	OE
RWCCEJ		0.0470	0.0030	0.46	0.0231	-0.0003	-0.05	OE
T4L9NH	M	0.0200	-0.0240	-3.73	No Data Reported			XR
UCWWXA		0.0442	0.0002	0.03	0.0206	-0.0027	-0.45	OE
UEGVZX		0.0300	-0.0140	-2.18	0.0100	-0.0134	-2.21	OE
UFDAQB	*	0.0258	-0.0182	-2.83	0.0122	-0.0112	-1.85	OE
UJ2LR2	X	0.1500	0.1060	16.45	0.1200	0.0966	15.99	OE
V9AUCM		0.0470	0.0030	0.46	0.0190	-0.0044	-0.72	IC
VKJJ2B		0.0449	0.0009	0.14	0.0361	0.0127	2.11	OE
WJMBJJ		0.0426	-0.0014	-0.22	0.0212	-0.0021	-0.35	OE
WMLUGC		0.0543	0.0103	1.60	0.0350	0.0116	1.93	OE
WNXBR4		0.0442	0.0001	0.02	0.0208	-0.0025	-0.42	OE
WVZFQF		0.0369	-0.0071	-1.11	0.0287	0.0053	0.88	OE
WXZT38		0.0361	-0.0079	-1.23	0.0154	-0.0079	-1.31	OE
XXJT7W		0.0486	0.0046	0.71	0.0249	0.0015	0.26	IC
YRBQE2		0.0487	0.0046	0.72	0.0280	0.0046	0.77	XX



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1651

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

Summary Statistics

	<u>Sample M87</u>		<u>Sample M88</u>	
Grand Means	0.0440	Percent	0.0234	Percent
Std Dev Btwn Labs	0.0064	Percent	0.0060	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 43 of 47 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1651

- 24AL9Z (X) - Data for both samples are high. Inconsistent within the determinations of sample M88.
- 7XBPN4 (M) - Participant did not submit data for sample M88.
- T4L9NH (M) - Participant did not submit data for sample M88.
- UJ2LR2 (X) - Data for both samples are high.



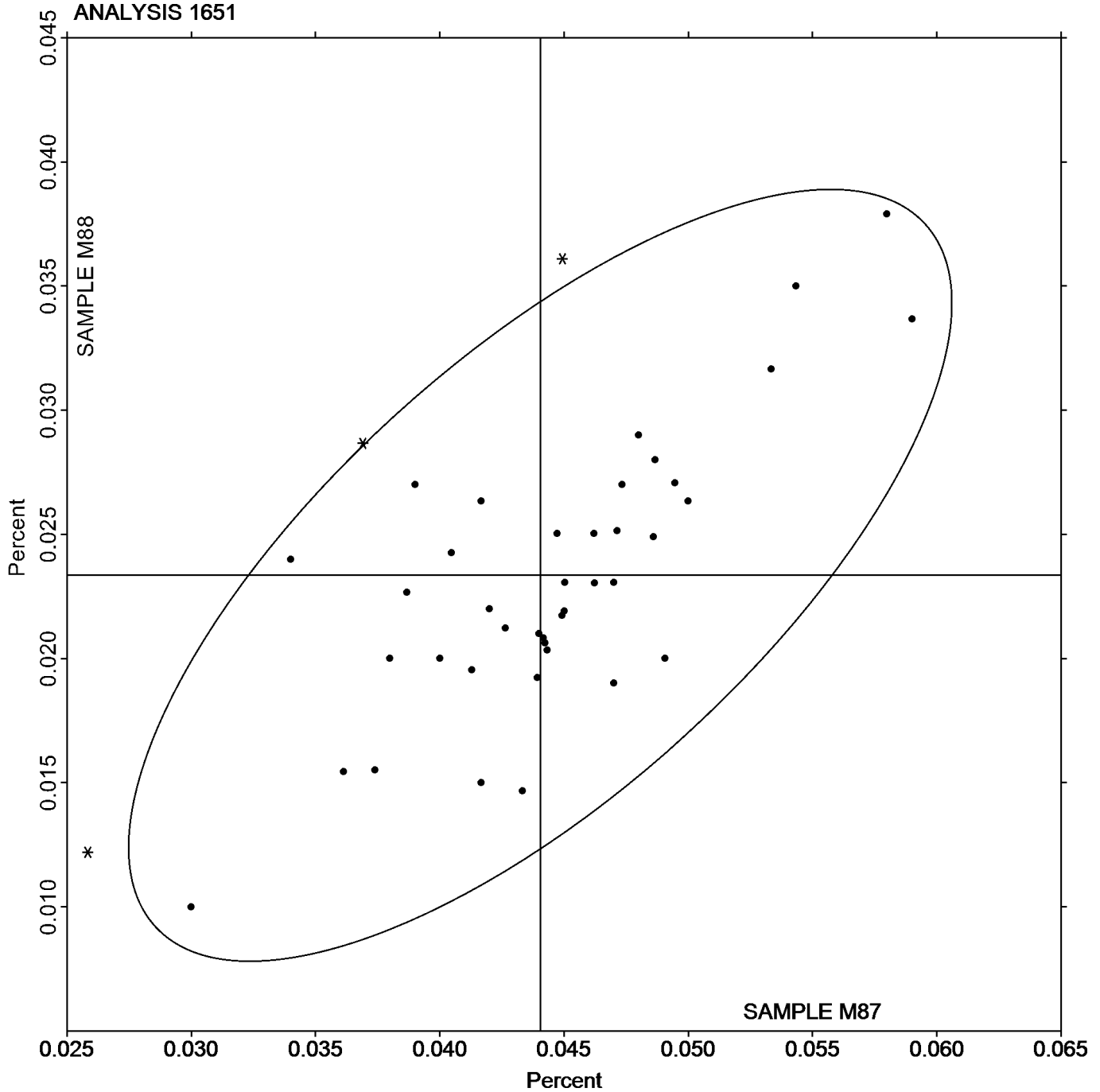
Analysis 1651

Corrosion Resistant Steel, TUNGSTEN (W)

TUNGSTEN (W)

SAMPLE M87
0.0440 Percent

SAMPLE M88
0.0234 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1652

Corrosion Resistant Steel, VANADIUM (V) VANADIUM (V)

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
24AL9Z		0.0620	-0.0029	-1.03	0.0703	-0.0052	-1.76	OE
2FRYUB		0.0650	0.0001	0.02	0.0760	0.0005	0.16	IC
2UQ8G6		0.0697	0.0047	1.64	0.0803	0.0048	1.63	OE
43B9XQ		0.0661	0.0011	0.39	0.0789	0.0033	1.13	OE
4XJQQT		0.0640	-0.0009	-0.33	0.0767	0.0011	0.39	IC
6KUJ4P		0.0600	-0.0049	-1.72	0.0730	-0.0025	-0.86	OE
6NCJJ6		0.0672	0.0022	0.77	0.0774	0.0019	0.65	OE
7N94TD		0.0629	-0.0020	-0.70	0.0733	-0.0022	-0.76	WD
7XBPN4		0.0657	0.0008	0.26	0.0752	-0.0003	-0.10	OE
87N3BT		0.0640	-0.0009	-0.33	0.0717	-0.0039	-1.31	GD
99JCDT		0.0620	-0.0029	-1.03	0.0720	-0.0035	-1.20	IC
9ADZWP		0.0684	0.0035	1.21	0.0793	0.0038	1.29	OE
BRMP7R		0.0670	0.0021	0.71	0.0773	0.0018	0.61	OE
CXWZAT		0.0633	-0.0016	-0.56	0.0750	-0.0005	-0.18	XR
CXWZEY		0.0700	0.0051	1.76	0.0800	0.0045	1.52	OE
D8YT47		0.0677	0.0027	0.95	0.0790	0.0035	1.18	XX
F8BCZL		0.0663	0.0014	0.48	0.0770	0.0015	0.50	IC
FFMCDA		0.0663	0.0014	0.47	0.0753	-0.0003	-0.09	OE
HEYV4K		0.0647	-0.0003	-0.10	0.0743	-0.0012	-0.41	WD
HLDP4B		0.0650	0.0001	0.02	0.0780	0.0025	0.84	OE
HZHVDL		0.0620	-0.0029	-1.03	0.0730	-0.0025	-0.86	XX
K9296G		0.0643	-0.0006	-0.21	0.0753	-0.0002	-0.07	XR
KKHTTK	X	0.0500	-0.0149	-5.20	0.0620	-0.0135	-4.60	XX
KKW6GH		0.0647	-0.0002	-0.09	0.0754	-0.0001	-0.03	OE
KPVFL4		0.0630	-0.0019	-0.68	0.0777	0.0021	0.73	OE
KVZ82T		0.0650	0.0001	0.02	0.0753	-0.0002	-0.07	OE
MHPJYA		0.0656	0.0007	0.23	0.0750	-0.0005	-0.18	GD
PHWKPZ		0.0690	0.0041	1.41	0.0787	0.0031	1.07	OE
PK8FHJ		0.0660	0.0011	0.37	0.0763	0.0008	0.27	IC
QEWNNC	X	0.0556	-0.0093	-3.25	0.0647	-0.0108	-3.68	OE
QMTJPG		0.0667	0.0017	0.60	0.0797	0.0042	1.42	OE
R6GLG3		0.0653	0.0004	0.13	0.0757	0.0001	0.05	IC
RB9LZQ	X	0.0900	0.0251	8.72	0.0990	0.0235	7.97	GD
RCNXX9		0.0707	0.0057	1.99	0.0787	0.0031	1.07	OE
RFH7RG		0.0677	0.0027	0.95	0.0797	0.0041	1.41	OE
RJ4YTC		0.0667	0.0017	0.60	0.0757	0.0001	0.05	OE
RN8WZH	*	0.0580	-0.0069	-2.42	0.0673	-0.0082	-2.78	OE
RWCCEJ		0.0642	-0.0007	-0.26	0.0741	-0.0014	-0.49	OE
T4L9NH	X	0.0540	-0.0109	-3.81	0.0683	-0.0072	-2.44	XR
UCWWXA		0.0636	-0.0013	-0.46	0.0744	-0.0011	-0.38	OE
UEGVZX		0.0600	-0.0049	-1.72	0.0700	-0.0055	-1.88	OE
UFDAQB		0.0615	-0.0034	-1.19	0.0718	-0.0038	-1.28	OE
UJ2LR2		0.0700	0.0051	1.76	0.0800	0.0045	1.52	OE
V9AUCM	X	0.0650	0.0001	0.02	0.0700	-0.0055	-1.88	IC
VKJJ2B		0.0644	-0.0005	-0.19	0.0739	-0.0016	-0.55	OE
WDHETR		0.0710	0.0061	2.11	0.0807	0.0051	1.75	OE
WJMJJ		0.0658	0.0009	0.31	0.0760	0.0004	0.15	OE



Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1652

Corrosion Resistant Steel, VANADIUM (V)
VANADIUM (V)

WebCode	Data Flag	Sample M87			Sample M88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
WMLUGC		0.0620	-0.0029	-1.03	0.0717	-0.0039	-1.31	OE
WNXBR4		0.0650	0.0001	0.02	0.0746	-0.0009	-0.32	OE
WTVWQ9		0.0600	-0.0049	-1.72	0.0727	-0.0028	-0.96	WD
WVZFQF		0.0646	-0.0003	-0.11	0.0750	-0.0005	-0.17	OE
WX4B6C		0.0630	-0.0019	-0.68	0.0740	-0.0015	-0.52	WD
WXZT38		0.0632	-0.0017	-0.60	0.0741	-0.0014	-0.49	OE
XXJT7W		0.0640	-0.0009	-0.33	0.0750	-0.0006	-0.19	WD
Y2YP77		0.0630	-0.0019	-0.68	0.0750	-0.0005	-0.18	IC
YRBQE2	X	0.0760	0.0111	3.85	0.0870	0.0115	3.90	XX

Summary Statistics

	Sample M87		Sample M88	
Grand Means	0.0649	Percent	0.0755	Percent
Std Dev Btwn Labs	0.0029	Percent	0.0029	Percent

Samples M87, M88 : AISI 304, AISI 304

Statistics based on 50 of 56 reporting participants

Key to Method Codes Reported by Participants

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

Comments on Assigned Data Flags for Test #1652

- KKHTTK (X) - Data for both samples are low. Possible Systematic Error.
- QEWNNC (X) - Data for both samples are low. Possible Systematic Error.
- RB9LZQ (X) - Data for both samples are high. Possible Systematic Error.
- T4L9NH (X) - Data for sample M87 are low.
- V9AUCM (X) - Inconsistent in testing between samples. Inconsistent within the determinations of sample M87.
- YRBQE2 (X) - Data for both samples are high. Possible Systematic Error. Inconsistent within the determinations of both samples.

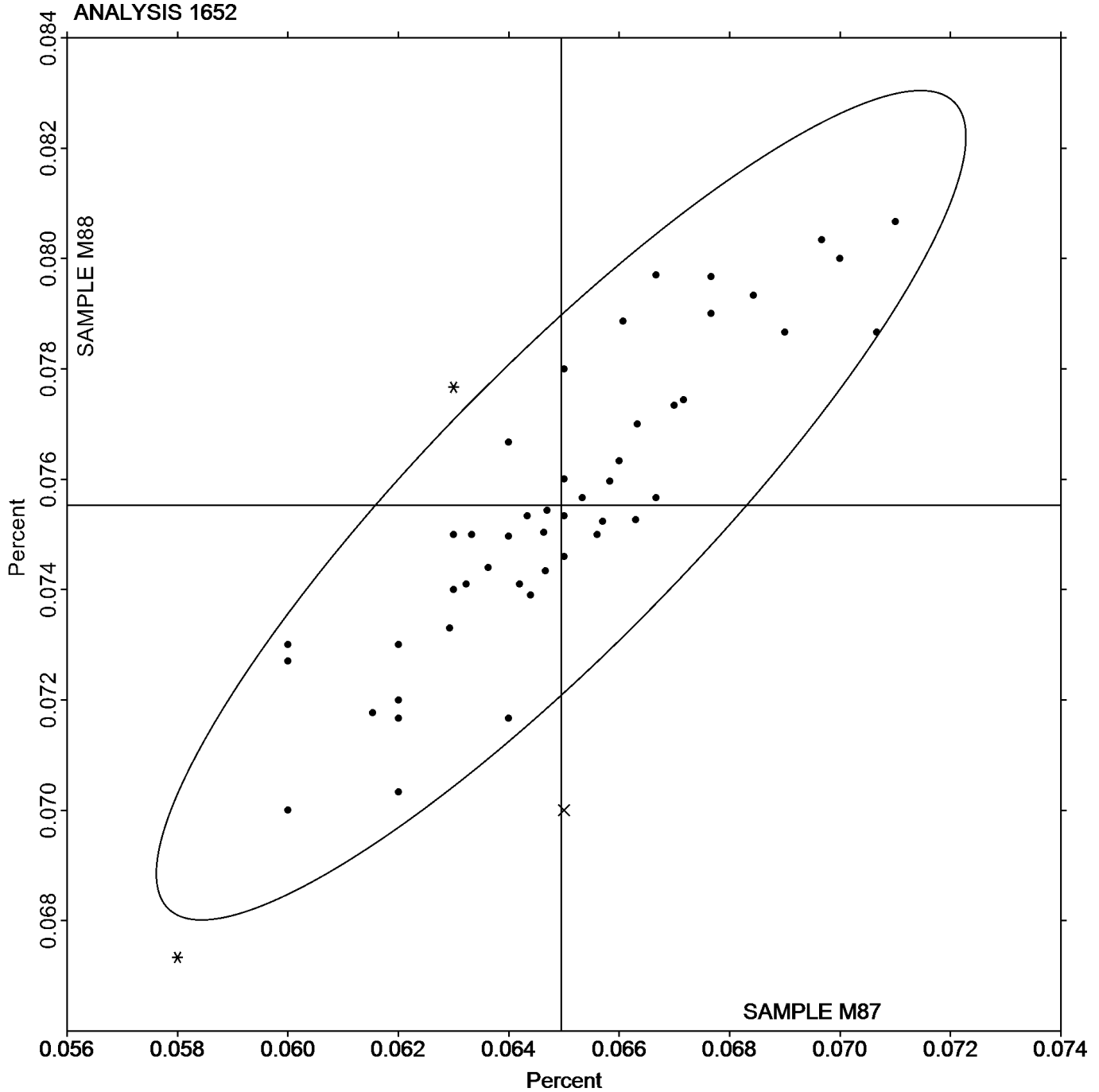


Analysis 1652

Corrosion Resistant Steel, VANADIUM (V)
VANADIUM (V)

SAMPLE M87
0.0649 Percent

SAMPLE M88
0.0755 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1700

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
3MGDN8		82.29	-0.44	-0.77	80.58	-0.43	-0.56	XR
6FWW93		82.66	-0.07	-0.13	81.08	0.07	0.09	OE
7JVF79		82.67	-0.06	-0.11	81.00	-0.01	-0.01	IC
7XBPN4		82.74	0.01	0.02	81.10	0.09	0.12	EL
AAUCLU		82.16	-0.57	-0.99	79.99	-1.02	-1.33	OE
CXWZEY		82.21	-0.52	-0.90	80.21	-0.80	-1.04	OE
HV4A8M		83.38	0.65	1.14	81.90	0.89	1.16	XR
LZQ2DK		82.53	-0.20	-0.35	80.68	-0.33	-0.43	GR
MHPJYA		82.63	-0.10	-0.18	80.57	-0.44	-0.58	EL
PPCDM6	*	84.58	1.85	3.23	83.30	2.29	2.99	ED
QEWNNC		82.37	-0.36	-0.63	80.43	-0.58	-0.75	OE
RJ4YTC		82.60	-0.13	-0.22	81.03	0.02	0.03	OE
RWCCEJ		82.53	-0.20	-0.34	80.83	-0.18	-0.23	OE
UED7V2		82.50	-0.23	-0.40	80.75	-0.26	-0.34	AA
V4YGUN		82.87	0.14	0.24	81.13	0.12	0.16	OE
WVZFQF		83.22	0.49	0.86	81.84	0.83	1.08	WD
Y2YP77		82.46	-0.27	-0.46	80.76	-0.25	-0.33	BD

Summary Statistics

	Sample K87		Sample K88	
Grand Means	82.73	Percent	81.01	Percent
Std Dev Btrwn Labs	0.57	Percent	0.77	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 17 of 17 reporting participants

Key to Method Codes Reported by Participants

AA	Spectrometry - Atomic Absorption (AAS)	BD	By Difference
ED	X-Ray Fluorescence - Energy Dispersive (EDX)	EL	Electrochemistry
GR	Gravimetry	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	WD	X-Ray Fluorescence - Wavelength Dispersive (WDX)
XR	X-Ray Fluorescence - ED or WD not specified		



Analysis 1700

Copper-based Alloy, COPPER (Cu)

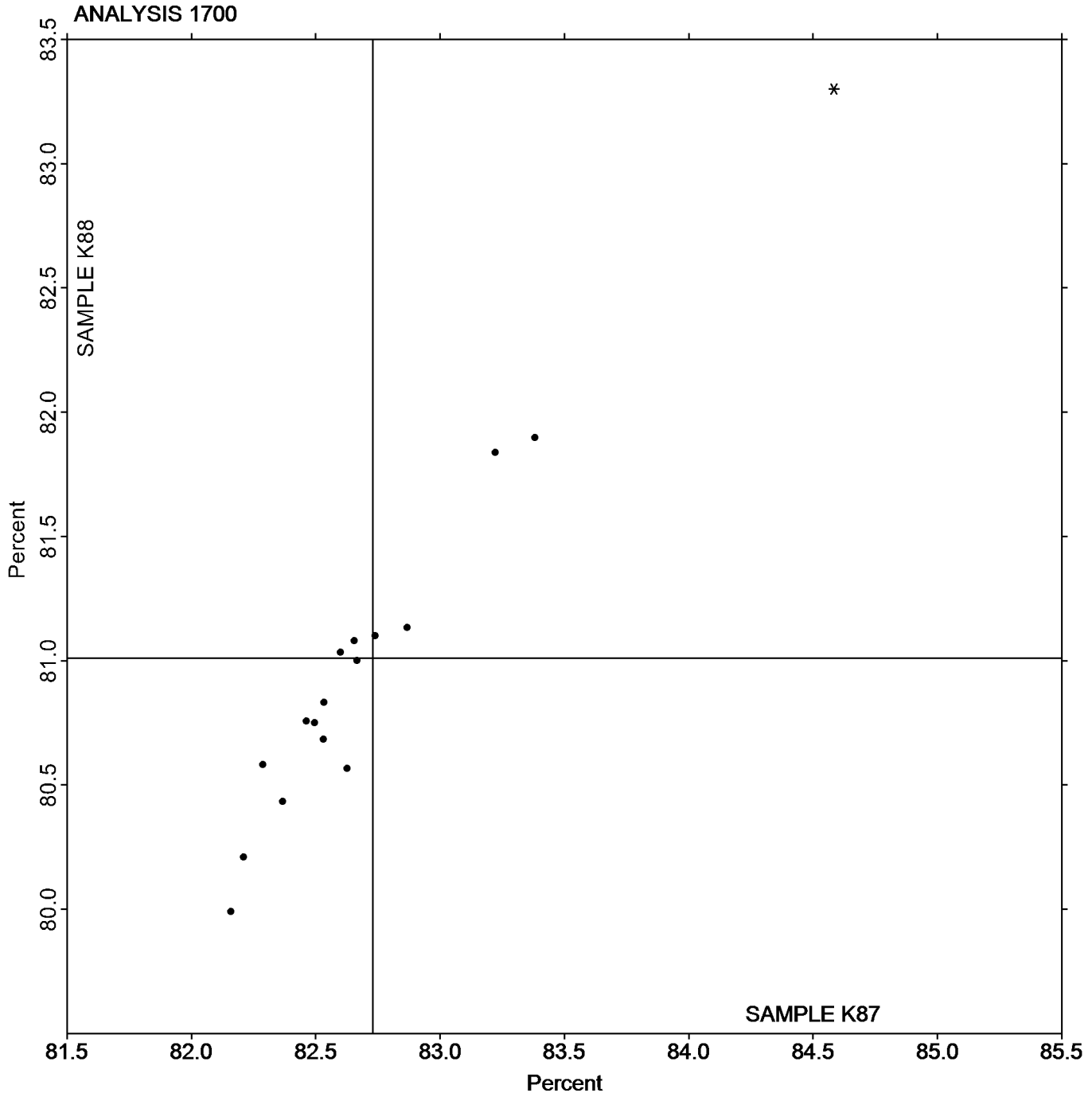
COPPER (Cu)

SAMPLE K87

SAMPLE K88

82.73 Percent

81.01 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1701

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		6.359	-0.023	-0.08	6.551	-0.012	-0.04	IC
3MGDN8		6.508	0.126	0.41	6.681	0.118	0.39	XR
6FWW93		6.654	0.271	0.89	6.896	0.333	1.09	OE
7JVF79		6.396	0.013	0.04	6.562	-0.001	0.00	IC
AAUCLU		6.540	0.157	0.52	6.723	0.160	0.52	OE
CXWZEY		6.165	-0.218	-0.72	6.381	-0.182	-0.60	OE
HV4A8M		6.608	0.225	0.74	6.659	0.096	0.31	XR
LZQ2DK		6.404	0.021	0.07	6.587	0.024	0.08	IC
PPCDM6	*	5.326	-1.057	-3.48	5.509	-1.054	-3.45	ED
QEWNNC		6.480	0.097	0.32	6.630	0.067	0.22	OE
RJ4YTC		6.410	0.027	0.09	6.540	-0.023	-0.08	OE
RWCCEJ		6.527	0.144	0.47	6.760	0.197	0.64	OE
UED7V2		6.391	0.008	0.03	6.527	-0.036	-0.12	AA
V4YGUN		6.507	0.124	0.41	6.757	0.194	0.63	OE
WVZFQF		6.374	-0.009	-0.03	6.569	0.006	0.02	OE
Y2YP77		6.473	0.091	0.30	6.677	0.114	0.37	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	6.383	Percent	6.563	Percent
Stnd Dev Brwn Labs	0.304	Percent	0.306	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 16 of 16 reporting participants

Key to Method Codes Reported by Participants

- | | | | |
|----|---|----|--|
| AA | Spectrometry - Atomic Absorption (AAS) | ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) | OE | Spectrometry - Optical Emission (OES) |
| XR | X-Ray Fluorescence - ED or WD not specified | | |



Analysis 1701

Copper-based Alloy, TIN (Sn)

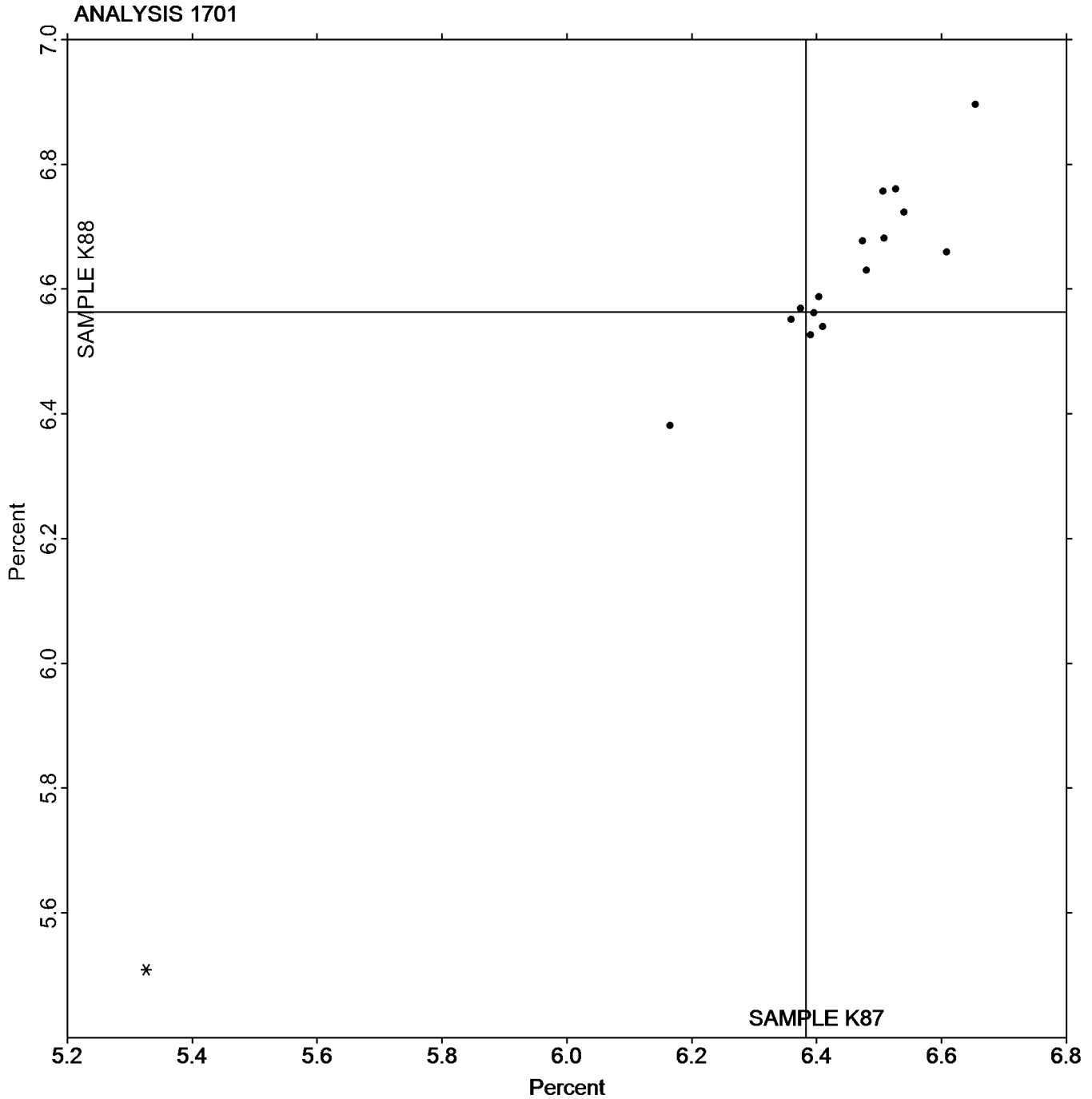
TIN (Sn)

SAMPLE K87

6.383 Percent

SAMPLE K88

6.563 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1702

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		6.253	-0.159	-0.27	7.595	0.221	0.30	IC
3MGDN8		6.551	0.139	0.24	7.375	0.000	0.00	XR
6FWW93		6.470	0.059	0.10	7.385	0.011	0.01	OE
7JVF79		6.626	0.214	0.36	7.528	0.154	0.21	IC
AAUCLU		7.407	0.995	1.69	8.707	1.332	1.78	OE
CXWZEY		7.059	0.647	1.10	8.198	0.824	1.10	OE
HV4A8M		5.750	-0.662	-1.12	6.587	-0.788	-1.05	XR
LZQ2DK		6.709	0.297	0.50	7.678	0.304	0.41	IC
PPCDM6		4.883	-1.529	-2.59	5.390	-1.984	-2.65	ED
QEWNNC		6.723	0.311	0.53	7.883	0.509	0.68	OE
RJ4YTC		6.423	0.011	0.02	7.343	-0.031	-0.04	OE
RWCCEJ		6.297	-0.115	-0.20	7.127	-0.248	-0.33	OE
UED7V2		6.770	0.358	0.61	7.707	0.332	0.44	AA
V4YGUN		5.740	-0.672	-1.14	6.523	-0.851	-1.14	OE
WVZFQF		6.182	-0.230	-0.39	7.332	-0.043	-0.06	OE
Y2YP77		6.747	0.335	0.57	7.633	0.259	0.35	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	6.412	Percent	7.374	Percent
Stnd Dev Brwn Labs	0.590	Percent	0.748	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 16 of 16 reporting participants

Key to Method Codes Reported by Participants

AA	Spectrometry - Atomic Absorption (AAS)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
XR	X-Ray Fluorescence - ED or WD not specified		



Analysis 1702

Copper-based Alloy, LEAD (Pb)

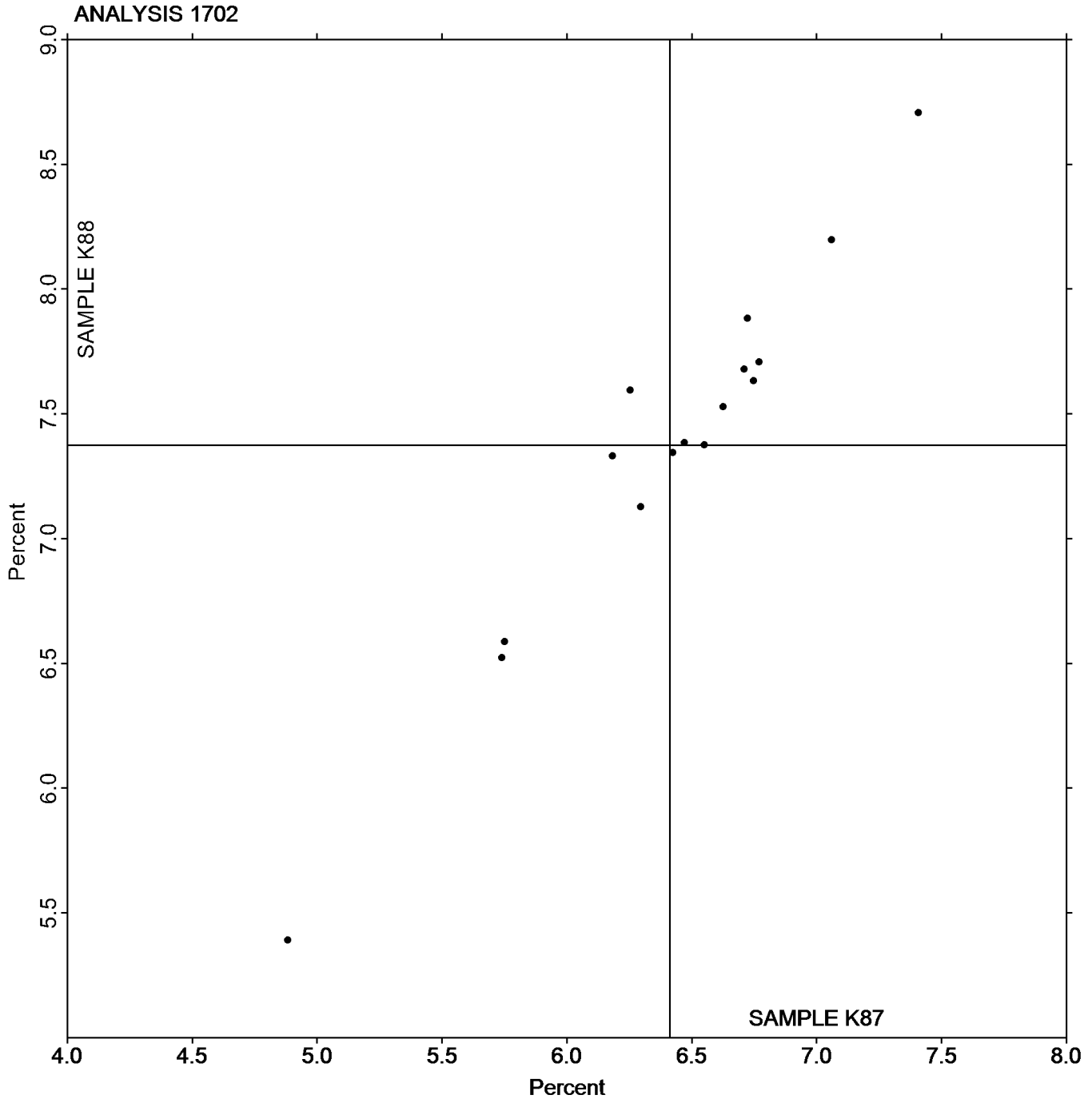
LEAD (Pb)

SAMPLE K87

6.412 Percent

SAMPLE K88

7.374 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1703

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		3.354	-0.100	-0.48	3.949	-0.128	-0.51	IC
3MGDN8		3.581	0.127	0.61	4.270	0.193	0.77	XR
6FWW93		3.007	-0.447	-2.13	3.534	-0.543	-2.16	OE
7JVF79		3.321	-0.133	-0.64	3.942	-0.135	-0.53	IC
AAUCLU		3.363	-0.091	-0.43	4.027	-0.050	-0.20	OE
CXWZEY		3.689	0.235	1.12	4.301	0.224	0.89	OE
HV4A8M		3.190	-0.264	-1.26	3.803	-0.274	-1.09	XR
LZQ2DK		3.477	0.023	0.11	4.063	-0.014	-0.05	IC
PPCDM6		3.505	0.051	0.24	4.154	0.077	0.31	ED
QEWNNC		3.467	0.012	0.06	4.063	-0.014	-0.05	OE
RJ4YTC		3.540	0.086	0.41	4.173	0.096	0.38	OE
RWCCEJ		3.617	0.162	0.78	4.293	0.216	0.86	OE
V4YGUN		3.893	0.439	2.10	4.623	0.546	2.17	OE
WVZFQF		3.367	-0.087	-0.42	3.901	-0.176	-0.70	OE
Y2YP77		3.441	-0.014	-0.06	4.055	-0.022	-0.09	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	3.454	Percent	4.077	Percent
Stnd Dev Btwn Labs	0.210	Percent	0.252	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 15 of 15 reporting participants

Key to Method Codes Reported by Participants

ED	X-Ray Fluorescence - Energy Dispersive (EDX)	IC	Spectrometry - Inductively Coupled Plasma (ICP)
OE	Spectrometry - Optical Emission (OES)	XR	X-Ray Fluorescence - ED or WD not specified



Analysis 1703

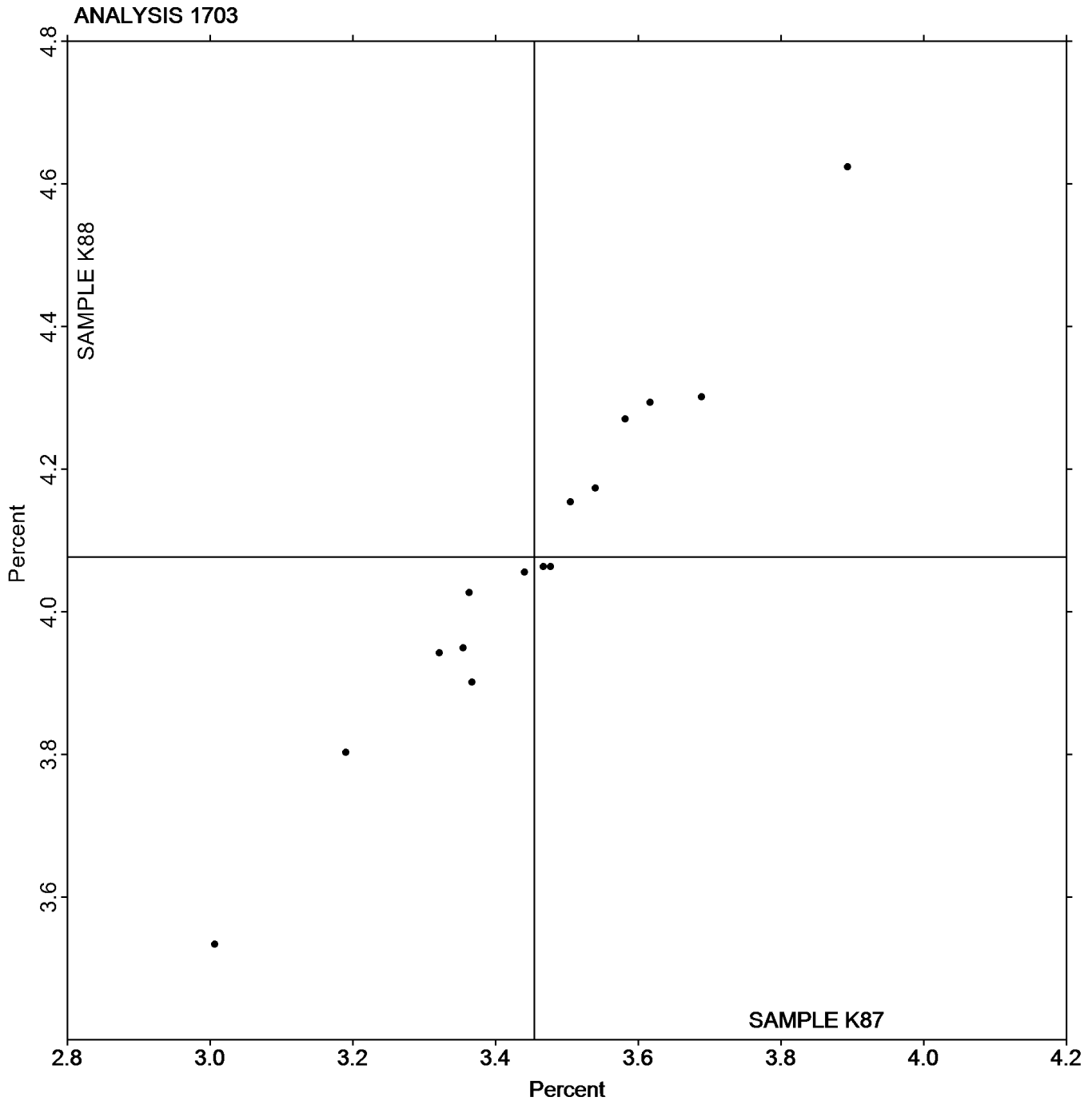
Copper-based Alloy, ZINC (Zn)
ZINC (Zn)

SAMPLE K87

3.454 Percent

SAMPLE K88

4.077 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1704

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		0.0215	-0.0117	-0.82	0.1060	-0.0125	-0.70	IC
3MGDN8		0.0308	-0.0025	-0.18	0.1221	0.0036	0.20	XR
6FWW93		0.0294	-0.0038	-0.27	0.1184	-0.0001	-0.01	OE
7JVF79		0.0310	-0.0023	-0.16	0.1180	-0.0005	-0.03	IC
AAUCLU		0.0283	-0.0049	-0.35	0.1153	-0.0032	-0.18	OE
CXWZEY		0.0272	-0.0061	-0.43	0.1190	0.0005	0.03	OE
HV4A8M		0.0404	0.0071	0.50	0.1402	0.0217	1.22	XR
LZQ2DK		0.0284	-0.0049	-0.34	0.1135	-0.0050	-0.28	IC
PPCDM6	*	0.0840	0.0507	3.56	0.1690	0.0505	2.83	ED
QEWNNC		0.0364	0.0032	0.22	0.1130	-0.0055	-0.31	OE
RJ4YTC		0.0290	-0.0043	-0.30	0.1147	-0.0038	-0.22	OE
RWCCEJ		0.0310	-0.0022	-0.16	0.0815	-0.0370	-2.08	OE
UED7V2		0.0287	-0.0046	-0.32	0.1085	-0.0100	-0.56	AA
V4YGUN		0.0233	-0.0099	-0.70	0.1223	0.0038	0.21	OE
WVZFQF		0.0346	0.0013	0.09	0.1201	0.0016	0.09	OE
Y2YP77		0.0284	-0.0049	-0.34	0.1147	-0.0038	-0.22	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	0.0333	Percent	0.1185	Percent
Stnd Dev Brwn Labs	0.0143	Percent	0.0178	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 16 of 16 reporting participants

Key to Method Codes Reported by Participants

- | | | | |
|----|---|----|--|
| AA | Spectrometry - Atomic Absorption (AAS) | ED | X-Ray Fluorescence - Energy Dispersive (EDX) |
| IC | Spectrometry - Inductively Coupled Plasma (ICP) | OE | Spectrometry - Optical Emission (OES) |
| XR | X-Ray Fluorescence - ED or WD not specified | | |



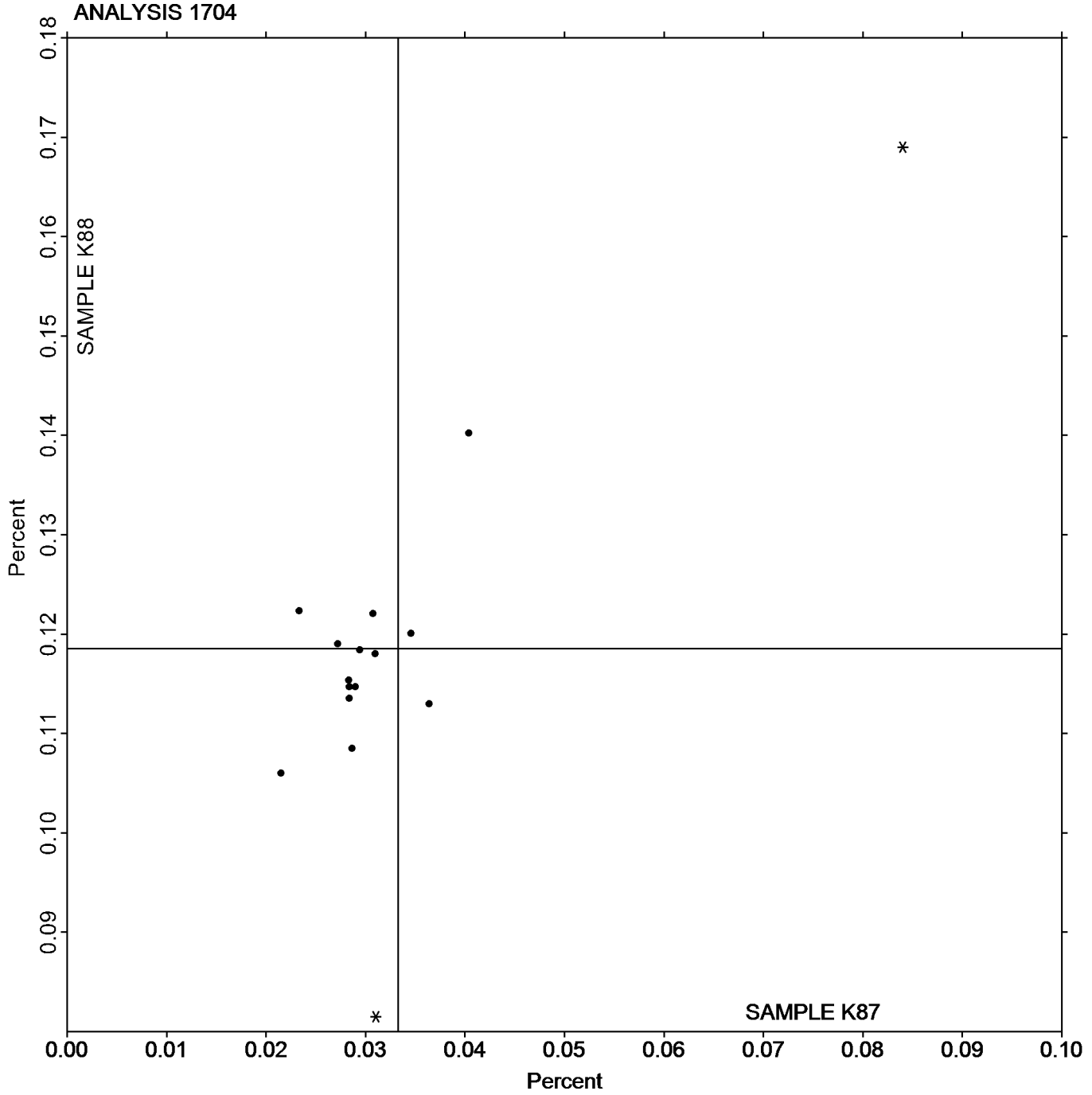
Analysis 1704

Copper-based Alloy, IRON (Fe)

IRON (Fe)

SAMPLE K87
0.0333 Percent

SAMPLE K88
0.1185 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1705

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		0.4387	0.0035	0.04	0.3533	0.0001	0.00	IC
3MGDN8		0.4776	0.0424	0.52	0.3857	0.0325	0.50	XR
6FWW93		0.4993	0.0641	0.79	0.4028	0.0496	0.76	OE
7JVF79		0.4497	0.0145	0.18	0.3620	0.0088	0.13	IC
AAUCLU		0.4357	0.0005	0.01	0.3543	0.0011	0.02	OE
CXWZEY		0.4860	0.0508	0.63	0.3910	0.0378	0.58	OE
HV4A8M		0.4808	0.0456	0.56	0.3835	0.0302	0.46	XR
LZQ2DK		0.4460	0.0108	0.13	0.3622	0.0090	0.14	IC
PPCDM6	*	0.1470	-0.2882	-3.57	0.1177	-0.2356	-3.62	ED
QEWNNC		0.4433	0.0081	0.10	0.3587	0.0054	0.08	OE
RJ4YTC		0.4450	0.0098	0.12	0.3680	0.0148	0.23	OE
RWCCEJ		0.4670	0.0318	0.39	0.3797	0.0264	0.41	OE
UED7V2		0.4384	0.0032	0.04	0.3548	0.0015	0.02	AA
V4YGUN		0.4687	0.0335	0.41	0.3807	0.0274	0.42	OE
WVZFQF		0.4444	0.0092	0.11	0.3609	0.0077	0.12	OE
Y2YP77		0.3960	-0.0392	-0.49	0.3367	-0.0166	-0.25	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	0.4352	Percent	0.3532	Percent
Stnd Dev Brwn Labs	0.0808	Percent	0.0651	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 16 of 16 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XR X-Ray Fluorescence - ED or WD not specified



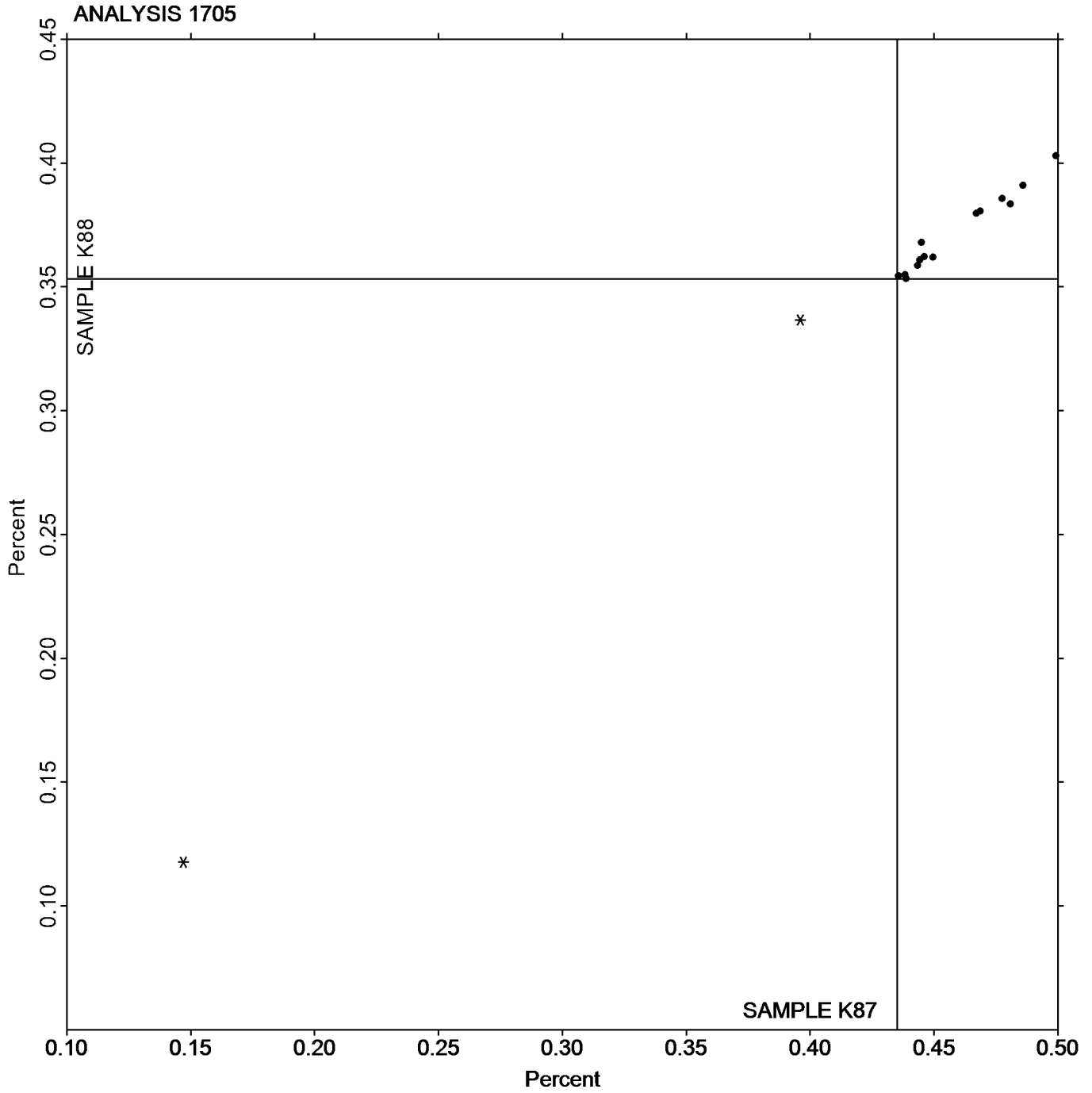
Analysis 1705

Copper-based Alloy, NICKEL (Ni)

NICKEL (Ni)

SAMPLE K87
0.4352 Percent

SAMPLE K88
0.3532 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1706

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		0.0328	0.0005	0.05	0.0352	0.0011	0.16	IC
3MGDN8		0.0160	-0.0164	-1.79	0.0178	-0.0163	-2.26	XR
6FWW93		0.0220	-0.0104	-1.14	0.0266	-0.0075	-1.04	OE
AAUCLU		0.0323	0.0000	0.00	0.0340	-0.0001	-0.01	OE
CXWZEY		0.0343	0.0019	0.21	0.0361	0.0020	0.28	OE
HV4A8M	*	0.0569	0.0245	2.68	0.0506	0.0165	2.29	XR
LZQ2DK		0.0310	-0.0013	-0.15	0.0326	-0.0015	-0.21	IC
QEWNNC		0.0335	0.0011	0.12	0.0350	0.0010	0.13	OE
RJ4YTC		0.0310	-0.0014	-0.15	0.0340	-0.0001	-0.01	OE
RWCCEJ		0.0317	-0.0007	-0.08	0.0344	0.0004	0.05	OE
V4YGUN		0.0340	0.0016	0.18	0.0370	0.0029	0.41	OE
WVZFQF		0.0352	0.0028	0.31	0.0369	0.0028	0.39	OE
Y2YP77		0.0301	-0.0022	-0.25	0.0328	-0.0013	-0.18	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	0.0324	Percent	0.0341	Percent
Std Dev Btwn Labs	0.0091	Percent	0.0072	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 13 of 13 reporting participants

Key to Method Codes Reported by Participants

- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XR X-Ray Fluorescence - ED or WD not specified



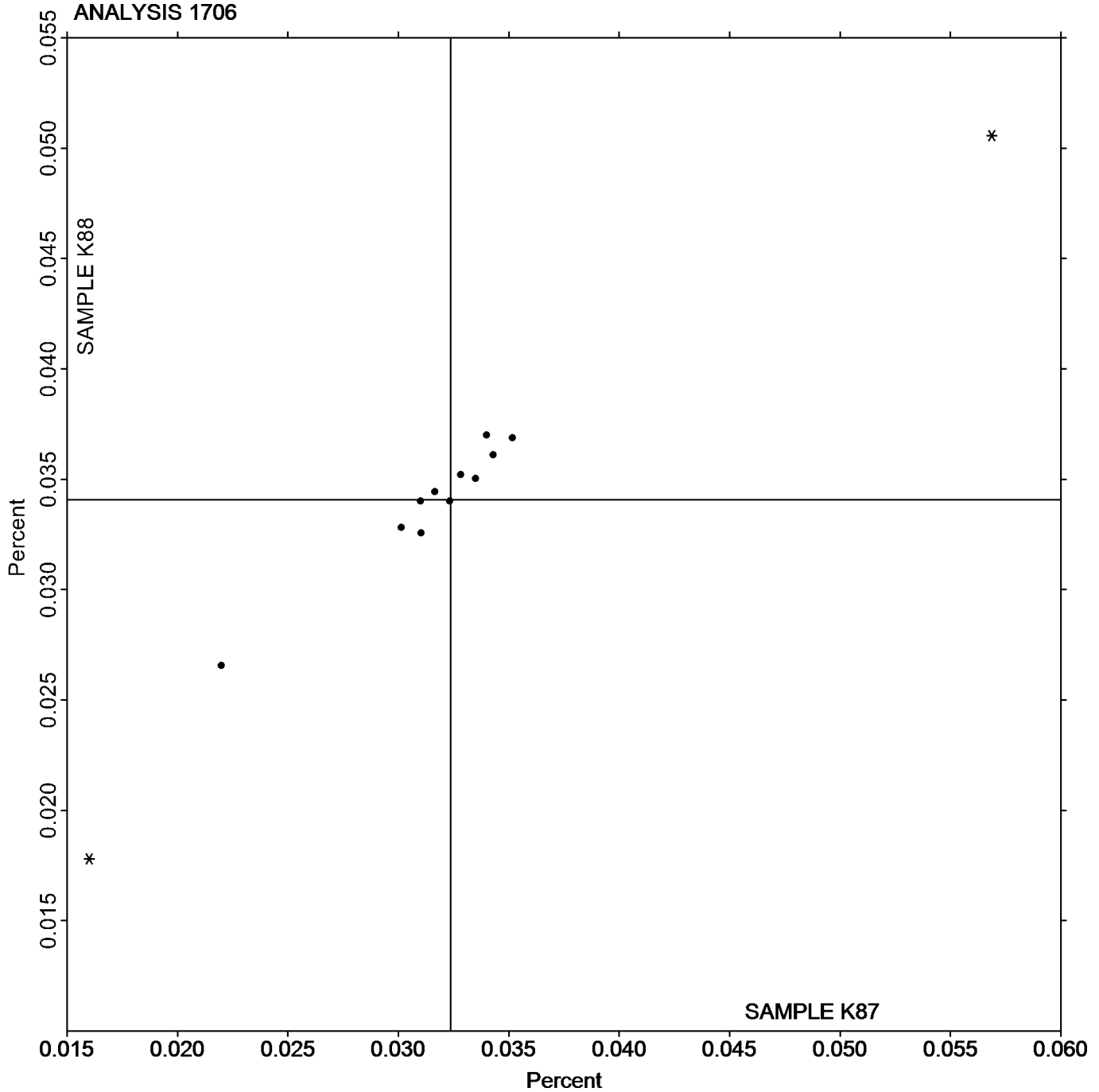
Analysis 1706

Copper-based Alloy, SULFUR (S)

SULFUR (S)

SAMPLE K87
0.0324 Percent

SAMPLE K88
0.0341 Percent





Fasteners and Metals Interlaboratory Testing Program

**Cycle 140
4th Qtr 2022**

Analysis 1707

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		0.0172	0.0025	0.31	0.0372	0.0037	0.31	IC
3MGDN8		0.00573	-0.0089	-1.08	0.0264	-0.0071	-0.61	XR
6FWW93		0.0103	-0.0044	-0.53	0.0287	-0.0048	-0.41	OE
AAUCLU		0.0140	-0.0007	-0.08	0.0330	-0.0005	-0.04	OE
CXWZEY		0.0115	-0.0032	-0.38	0.0315	-0.0020	-0.17	OE
HV4A8M	*	0.0397	0.0250	3.02	0.0606	0.0271	2.30	XR
LZQ2DK		0.0146	-0.0001	-0.01	0.0325	-0.0010	-0.09	IC
PPCDM6	*	0.00433	-0.0103	-1.25	0.00367	-0.0298	-2.53	ED
QEWNNC		0.0168	0.0022	0.26	0.0406	0.0071	0.60	OE
RJ4YTC		0.0167	0.0020	0.24	0.0320	-0.0015	-0.13	OE
RWCCEJ	M	No Data Reported			0.0228	-0.0107	-0.91	OE
UED7V2		0.0160	0.0013	0.16	0.0380	0.0045	0.38	AA
V4YGUN		0.0160	0.0013	0.16	0.0373	0.0038	0.32	OE
WVZFQF		0.00913	-0.0055	-0.67	0.0330	-0.0005	-0.05	OE
Y2YP77		0.0132	-0.0015	-0.18	0.0348	0.0013	0.11	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	0.0147	Percent	0.0335	Percent
Stnd Dev Btwn Labs	0.0083	Percent	0.0118	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 14 of 15 reporting participants

Key to Method Codes Reported by Participants

- AA Spectrometry - Atomic Absorption (AAS)
- ED X-Ray Fluorescence - Energy Dispersive (EDX)
- IC Spectrometry - Inductively Coupled Plasma (ICP)
- OE Spectrometry - Optical Emission (OES)
- XR X-Ray Fluorescence - ED or WD not specified

Comments on Assigned Data Flags for Test #1707

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

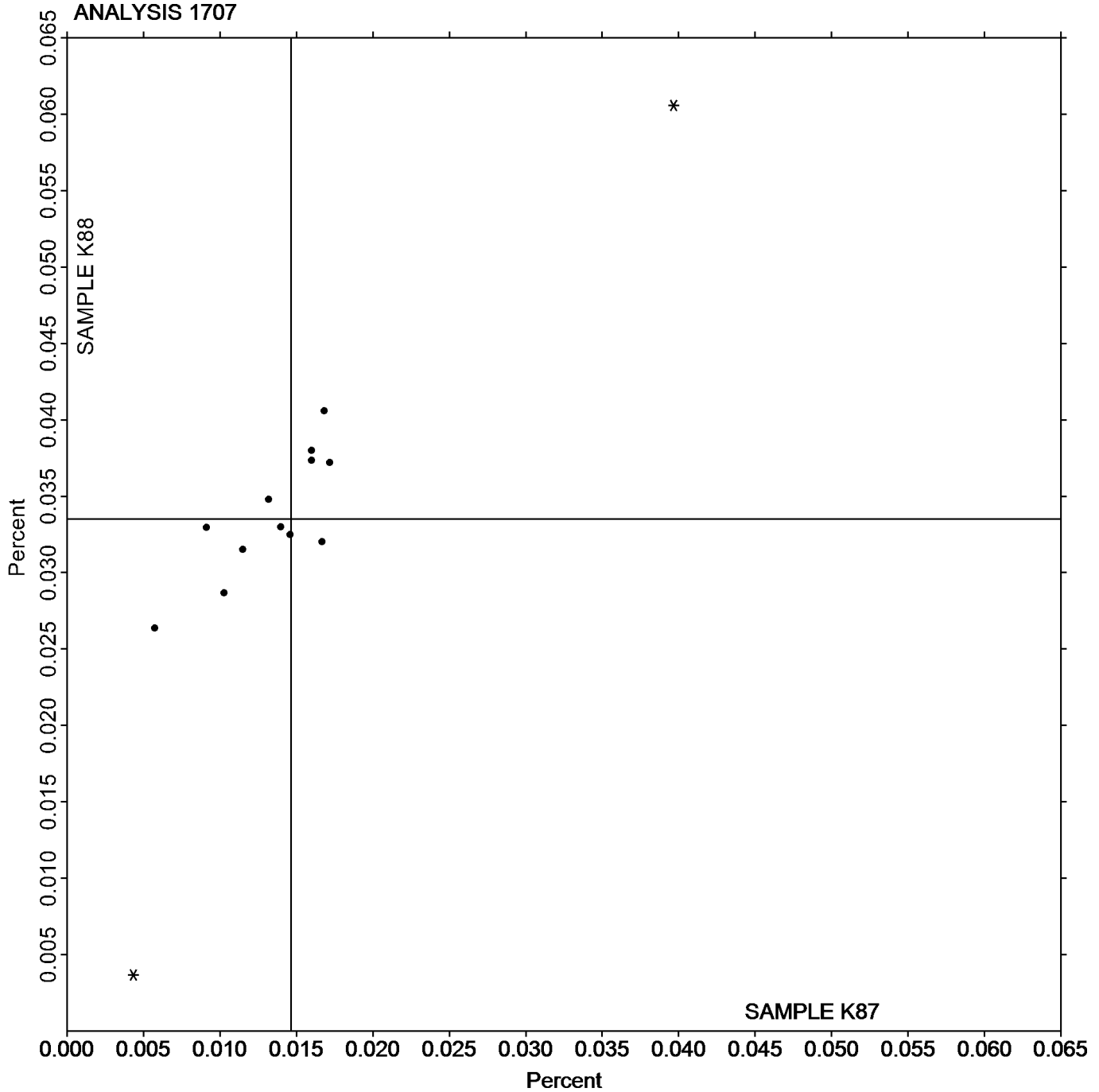


Analysis 1707

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

SAMPLE K87
0.0147 Percent

SAMPLE K88
0.0335 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140
4th Qtr 2022

Analysis 1712

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

WebCode	Data Flag	Sample K87			Sample K88			Method
		Lab Mean	Diff. from Grand Mean	CPV	Lab Mean	Diff. from Grand Mean	CPV	
2FPAQE		0.1320	-0.0248	-1.19	0.2303	-0.0307	-1.19	IC
3MGDN8		0.1976	0.0408	1.96	0.3152	0.0542	2.11	XR
6FWW93		0.1689	0.0121	0.58	0.2626	0.0016	0.06	OE
CXWZEY		0.1440	-0.0128	-0.62	0.2610	0.0000	0.00	OE
HV4A8M		0.1471	-0.0097	-0.47	0.2520	-0.0090	-0.35	XR
LZQ2DK		0.1460	-0.0108	-0.52	0.2570	-0.0040	-0.15	IC
PPCDM6		0.2043	0.0475	2.29	0.3090	0.0480	1.87	ED
QEWNNC		0.1493	-0.0075	-0.36	0.2540	-0.0070	-0.27	OE
RJ4YTC		0.1507	-0.0062	-0.30	0.2240	-0.0370	-1.44	OE
RWCCEJ		0.1630	0.0062	0.30	0.2810	0.0200	0.78	OE
UED7V2		0.1564	-0.0004	-0.02	0.2598	-0.0012	-0.05	AA
V4YGUN		0.1407	-0.0162	-0.78	0.2493	-0.0117	-0.45	OE
WVZFQF		0.1482	-0.0086	-0.42	0.2565	-0.0045	-0.17	OE
Y2YP77		0.1473	-0.0095	-0.46	0.2423	-0.0187	-0.73	OE

Summary Statistics

	Sample K87		Sample K88	
Grand Means	0.1568	Percent	0.2610	Percent
Stnd Dev Btwn Labs	0.0208	Percent	0.0257	Percent

Samples K87, K88 : CDA 932, CDA 932

Statistics based on 14 of 14 reporting participants

Key to Method Codes Reported by Participants

AA	Spectrometry - Atomic Absorption (AAS)	ED	X-Ray Fluorescence - Energy Dispersive (EDX)
IC	Spectrometry - Inductively Coupled Plasma (ICP)	OE	Spectrometry - Optical Emission (OES)
XR	X-Ray Fluorescence - ED or WD not specified		



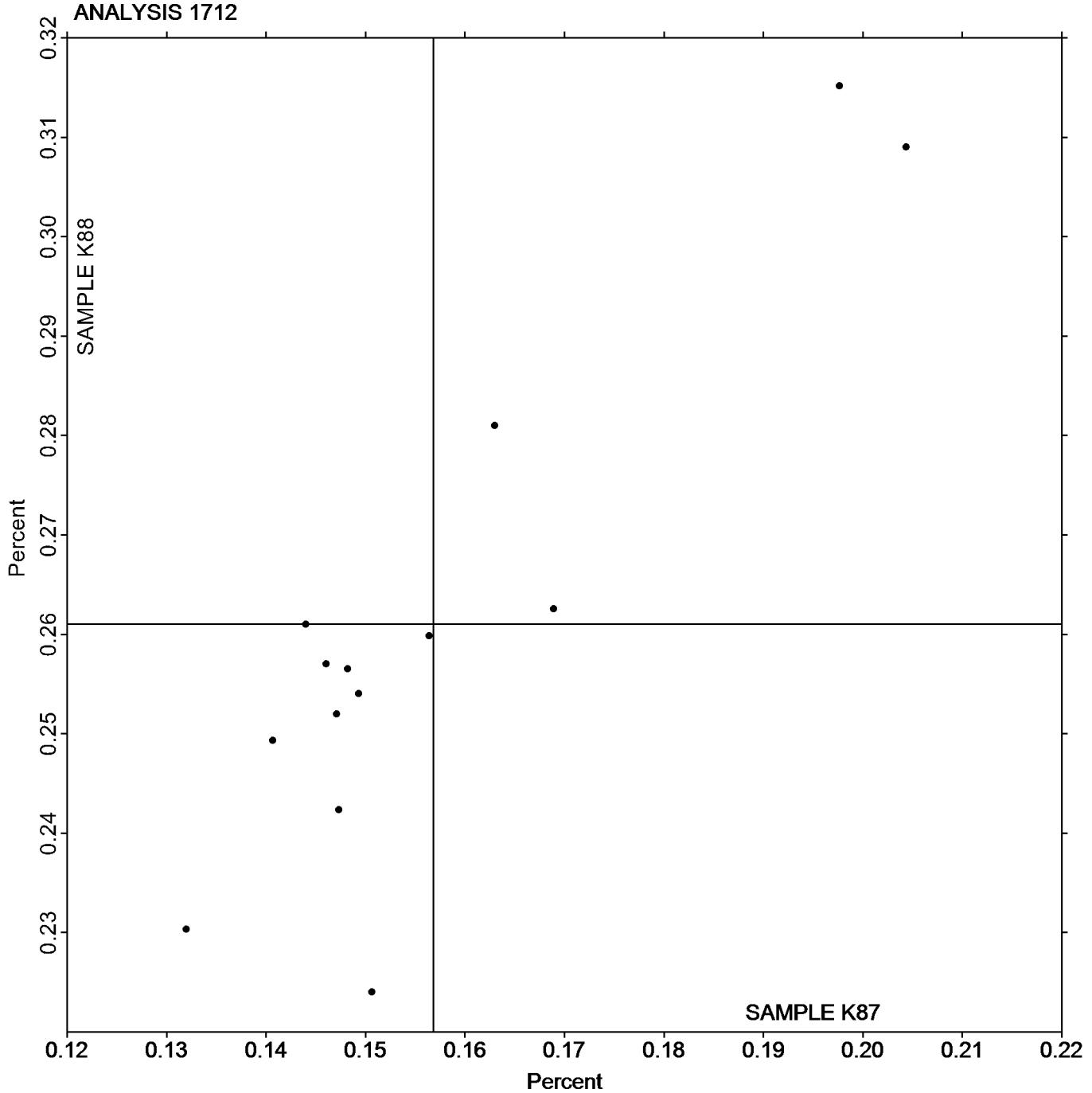
Analysis 1712

Copper-based Alloy, ANTIMONY (Sb)

ANTIMONY (Sb)

SAMPLE K87
0.1568 Percent

SAMPLE K88
0.2610 Percent





Fasteners and Metals Interlaboratory Testing Program

Cycle 140

Analysis 1712

4th Qtr 2022

Copper-based Alloy, ANTIMONY (Sb)

ANTIMONY (Sb)

-End of Report-